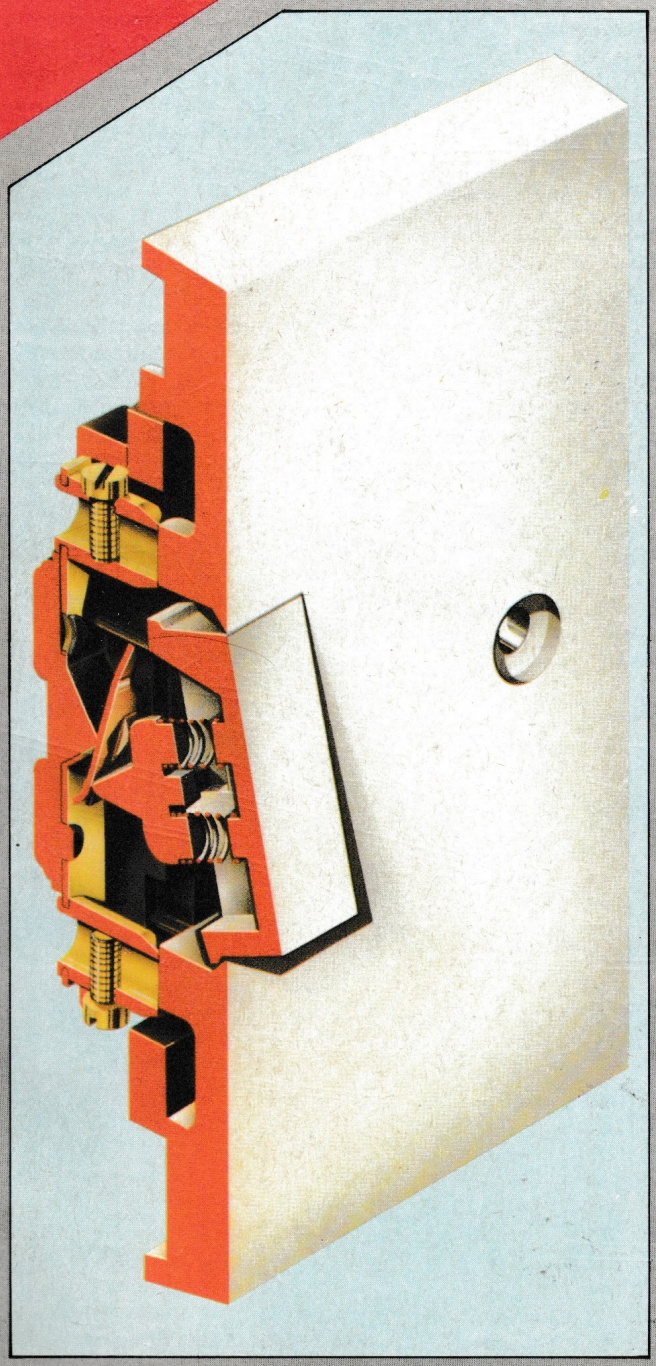
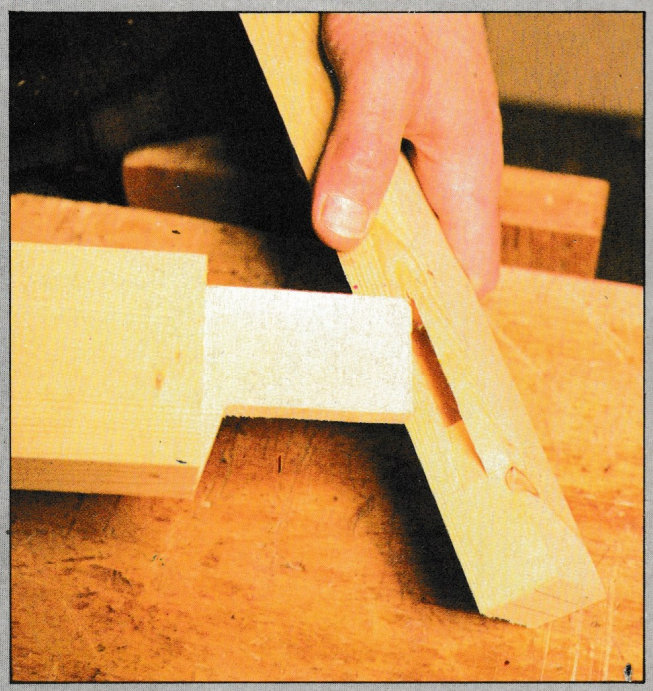
A Marshall Cavendish Publication in weekly parts

Part 22

THE KNACK

The complete manual of DIY skills, projects and home ideas





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THE KNACK

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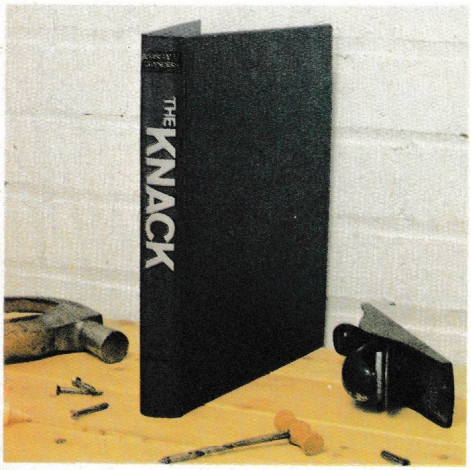

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Replacing broken glass

Reglazing is an occasional household maintenance job that you can do easily yourself just when the need arises. Also, considering the number of decorative forms of sheet glass available, it is a novel way of redecorating

Apart from the danger of exposed broken glass, a smashed window in the home is an open invitation to an intruder. You can reduce both risks by reglazing the window yourself. The job requires care but is straightforward and quick.

If you are reglazing a downstairs window it should not be necessary to remove the window from its frame. But if the window is upstairs, you need an extension ladder to reach the outside of the window. In this case, the job will take longer and you may find it more convenient to take the window out of its frame and reglaze it on a workbench at groundlevel.

A sash can be removed from a casement window by unscrewing the hinges. Use a bradawl to scrape out paint from the screw heads. To remove a sash from a double-hung window means removing woodwork, so in the case of an upstairs window, it may be better to work from a ladder.

If you decide to work from the ladder, secure it at the top by looping a safety rope through the rungs and around a suitable anchor point. Additionally, make sure the feet of the ladder are well anchored (see page 553).

A useful tip is to wear an apron or workman's overall which has large tool pockets so that you can carry everything likely to be needed for the job. This will save countless trips up and down the ladder during the course of the installation.

Removing old glass

Take particular care when you are removing old glass from its frame. Always use heavy-duty (leather) gloves to pull out loose pieces (fig. 1).

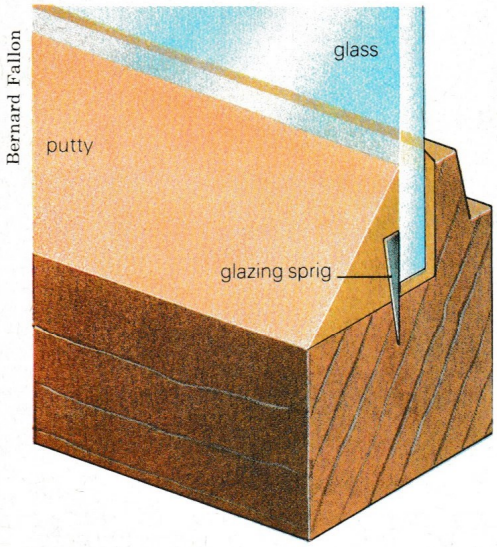
Uncracked sections and stubborn slivers must be smashed out with a hammer. But before you do this, cover both sides of the glass with thick cloth or blanket to prevent chips flying through the air. For additional safety, wear spectacles, or old sunglasses at all times.

If you have removed the window from the main frame, cover it and lay it on several sheets of newspaper

Below: *It is sensible to replace the glass of a broken ground-floor window as soon as possible to deter would-be intruders. You can use replacement glass of the same type or choose instead from the many decorative and strengthened types now available*

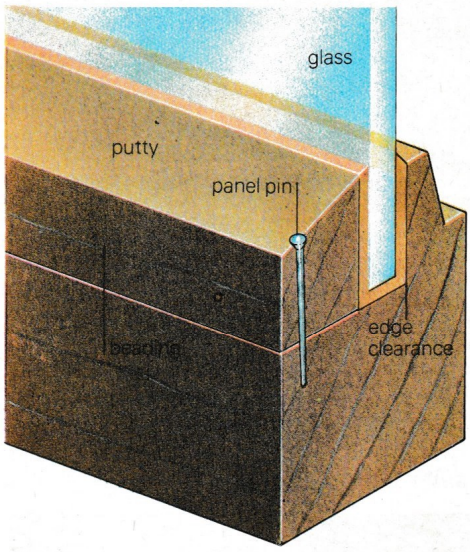
Ray Duns

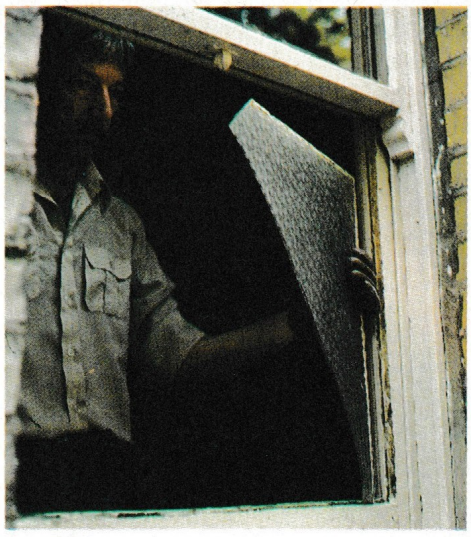
Below: *Cross-section showing the normal method of glazing with putty. Triangular-shaped nails called sprigs are used to hold the pane in place against the back putty. These are then covered by putty*



Bernard Fallon

Below: *Wooden beading can be used in place of the set of sprigs. This results in a neater looking finished job which many prefer to the more common putty glazing method where greater skill is required*





1 *Carefully work loose the large fragments of glass, then tap out the smaller pieces. Wear heavy-duty gloves when handling the glass*

5 *Push the replacement pane into position but apply pressure at the edges only. The back putty seal should be even and unbroken*

before you knock out the glass. This will make it easier to gather up the splinters afterwards.

After you have hammered out the glass, carefully remove the covering cloth and work loose fragments left in the frame. You should be able to prise out the glass quite easily, but if the putty is very old and hard and the glass refuses to be teased loose, cover the window with a cloth again and smash the fragments down to the level of the putty. Then, wearing eye protection, use a hammer and chisel to knock out the remaining putty with the glass embedded in it.

The old putty can be removed with a *hacking knife*—a tool specifically designed for this job—but a chisel will do the job nearly as well. Make sure that the chisel is an old one, well past its useful life, as it will become quite blunt when used in this way. Remove all the putty, including the *back* or *bedding layer* and take care not to damage the wood with whatever tools you use (fig. 2).

Measuring up the pane

When measuring up for the new pane of glass, always take the measurements twice: a mistake of only a few millimetres can make the pane unusable. Also, measure each opening within the main frame separately as small size differences between any two can go unnoticed until it comes to reglazing.

When you have determined the final height and width measurements, subtract about 3mm from each to allow sufficient clearance in the frame—increase this to 6mm in the case of slightly warped frames.

When giving measurements to the glass merchant, it is customary to give the height before the width. This way, if you are buying frosted or patterned glass, the pattern will be the correct way up (vertical) when you instal it.

The glass

Glass is now graded by thickness in millimetres—it was formerly graded by weight per square foot—and for most applications 4mm is adequate, although 3mm is sufficient for smaller windows. *Float glass* is now the most commonly used for general purpose work but cheaper *horticultural glass* may be used where viewing distortion is no problem—such as in a greenhouse.

For help and advice on the choice and safe use of glass, do not be afraid to consult your local glass supplier. Several types of glass can be used around the house and it is important to use a strengthened form where there is risk of breakage. For example, UK recommendations state that only toughened or laminated glass should be used for balustrades which protect a difference in floor levels or which are used for shower screens.

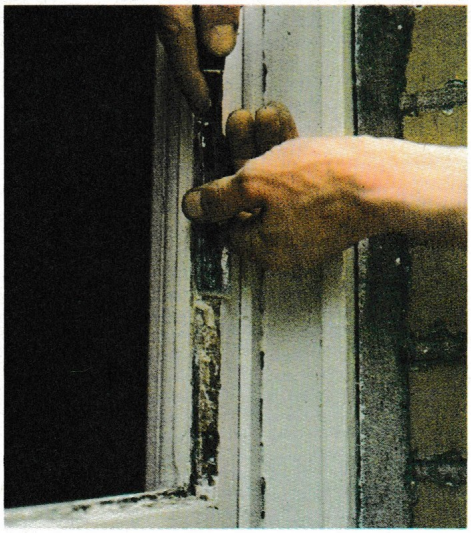
Wired and laminated glass can both be used for floor-level windows, and those near to stairs (such as in a hall) often require reglazing in spite of this.

A wide variety of decorative glass is available in addition to standard frosted patterns; using these in place of clear glass for extra privacy is well worth considering.

Before you instal the glass, place and check it for fit in the frame and, if necessary, get the supplier to make small adjustments. You can sometimes accommodate very small irregularities by turning the sheet upside down or around in relation to the frame and then trying it again.

Using putty

Putty needs to be of the right consistency if it is to hold the glass in place and form a watertight seal. And when first taken from the tin it is inclined to be too wet, rather sticky



2 *Use an old chisel or a hacking knife to remove hardened putty. Be especially careful of slivers of glass that may be embedded in this*

3 *Take particular care to clean out the upper rebate in a vertical sash window, but beware of glass slivers stuck in old putty here*

4 *Apply small nodules to the frame rebate so that sufficient back putty depth results. Use the heel of your hand to force putty home*

6 *Use a hammer or old chisel to tape the glazing sprigs home and slide the head along the glass to avoid cracking the pane*

7 *Trim off the back putty by a straight cut with the putty knife. Then apply the facing putty and smooth this down to finish*

8 *When the putty has matured, four weeks or so afterwards, it must be painted over to prevent it from drying out completely*

and consequently difficult to handle. Knead it gently between the palms of your hands or place it between folds of newspaper to remove excess moisture and oil (fig. 3).

If your putty is old and has hardened, you may be able to soften it with linseed oil—though it is usually easier to buy a fresh tin.

There are two types of putty: linseed oil putty for wooden-framed windows, and metal casement putty for use with metal frames. The latter should also be used as a bedding seal if metal-framed glass—such as insulating glass—is fixed into a wooden frame. In this case, linseed oil putty is used to finish off the outside seal.

Installing the glass

Once you have checked the glass for fit, lay a strip of back (bedding) putty around the window frame (fig. 4*t*. Where hacking off the old putty has exposed areas of bare wood, prime these and let them dry before you apply putty over them. Use the heel of your hand to smear the nodules of putty around the insides of the rebates.

Place the glass in the frame and push it gently but firmly against the bedding putty. Push around the outside of the frame—not the middle—with a pad of cloth to protect you against any slivers of old glass left in the frame. As you do this, the putty will ooze out on the other side.

The bedding putty is necessary not only for providing a good watertight seal, but because it also takes up small irregularities in the trueness of the backing frame. A final depth of up to about 5mm is recommended, and you can ensure an even depth around the frame by locating small wooden spacers such as match wood.

The sheet of glass must be centred within the frame—you should already have had it cut to measurements slightly smaller than the frame's inner dimensions. The best way of doing this is to stick matchsticks between the glass edge and frame at odd points around the window (fig 6); use folds of thin wood or card to build up greater

depths. Spacers should not be necessary if you can work on the window flat.

When the sheet of glass is properly bedded, by which time it should remain in position by itself, secure the glass on each side of the frame by tapping home a couple of *glazing sprigs* (fig. 6) These are small, headless nails, buried by the face putty when the glazing is completed. On larger windows, use more sprigs at 150mm spacings around the frame. Start with the bottom edge and then deal with the top and side edges.

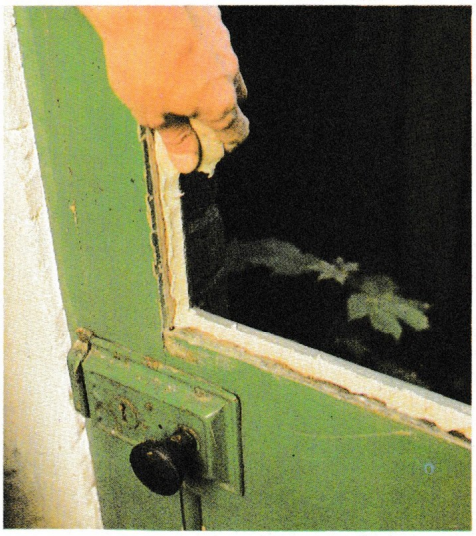
To avoid breaking the glass, if you choose a hammer, hold the sprig next to the glass and then slide the hammer head along the glass to tap the sprig down and below the level of the facing putty later added. Never lift the hammer from the glass surface, nor try to force a sprig home.

When this is done, you can apply the final (facing) putty. Start where you like and feed in little nodules of putty as you proceed around the edge, using the heel of your hand to press it fully home. The finished height of the facing putty must be no higher than the inside level of the frame, and therefore not visible from inside.

Finish the job by trimming off waste putty with a putty knife. Hold the flat edge against the pane of glass and run the knife along the edge of putty, pressing firmly downwards as you go (fig. 7). If the knife sticks, wet the blade with water. Should the putty become unstuck as you drag the knife over it, push it back in firmly and continue trimming with the knife.

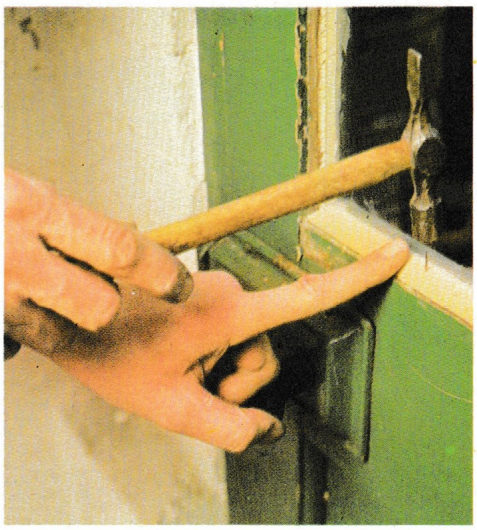
Finally, rake off the putty that has oozed out at the back of the glass level with the frame. When trimming be careful of small splinters which may still be left in the putty.

9 *For a beaded window, start by carefully levering off the wooden beading, especially if this is to be re-used for re-glazing*



10 *Much the same procedure is used as far as glass and putty removal is concerned. After making good, apply the bedding putty*

11 *Push the glass home against the bedding putty. Apply a small amount to the front glass and the nearby framework*



12 *Seat the wooden beading on this bedding seal and use ovals to fix the beading tight in place. Trim excess putty*

Wooden beading

Some windows use wooden beading in place of facing putty (fig. 11) and you can usually use this again when you set the new pane. Remove the side beading first—because it is longer and therefore more flexible—by bowing the ends towards you.

Remove the small oval fixing nails afterwards by pulling them right through the beading—do not try to knock them back through the beading as this may split the wood. When you have removed all the ovals, clean the beading with a medium grade of glass-paper. Any old putty on the back must be removed, as must the jagged edge left by the broken paint line where the bead joins the frame.

If the old beading is damaged and needs replacing, ask your supplier for *staff beading* in the length required. It is normally available in two sizes, so take along a piece of the old beading.

The mitred joints at the ends of glazing beads are most easily cut on a mitre block. If you do not have one, lay the new length beside the old one and use the latter as a cutting guide. It helps if both are taped or clamped together before cutting.

Beading is positioned as the sheet of glass is pushed home on the bedding putty. Fix the shorter (top and bottom) lengths first, using ovals at 100mm intervals (fig. 12). For a really professional finish, punch in the glazing pins first so that the heads will not be visible when the beading itself is later decorated.

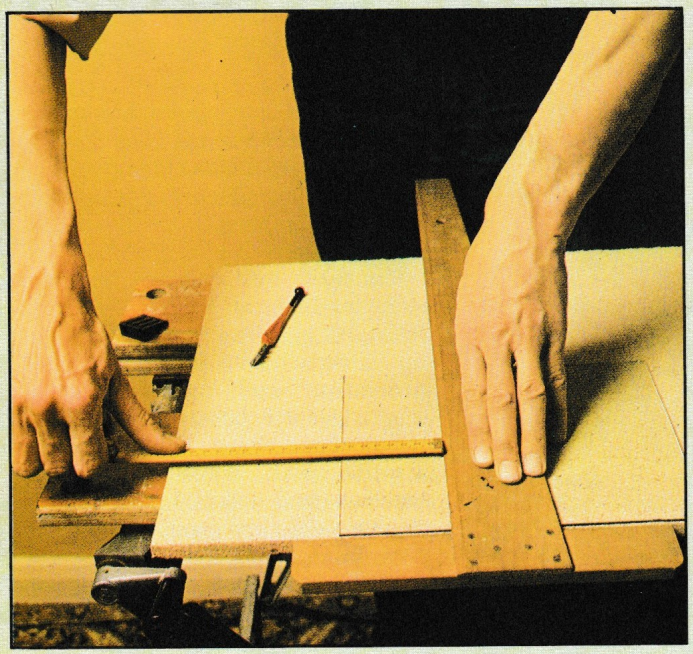
Use the point of a putty knife to remove bedding putty that has oozed out of the back and sides.

Decorating

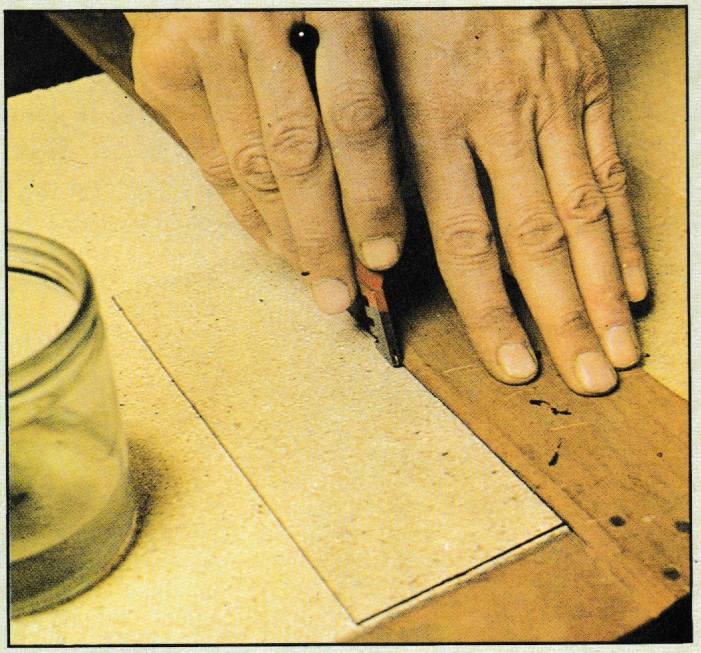
Leave the freshly-bedded putty to mature for about four weeks before you paint it. But do not delay this final job for too long or the putty will shrink and crack, causing all sorts of problems later. When painting, carry the paint layer just beyond the edges of the putty and on to the glass in order to provide a better waterproof seal and to keep the putty moist.

Allow for this overlap when gauging the depth of putty required.

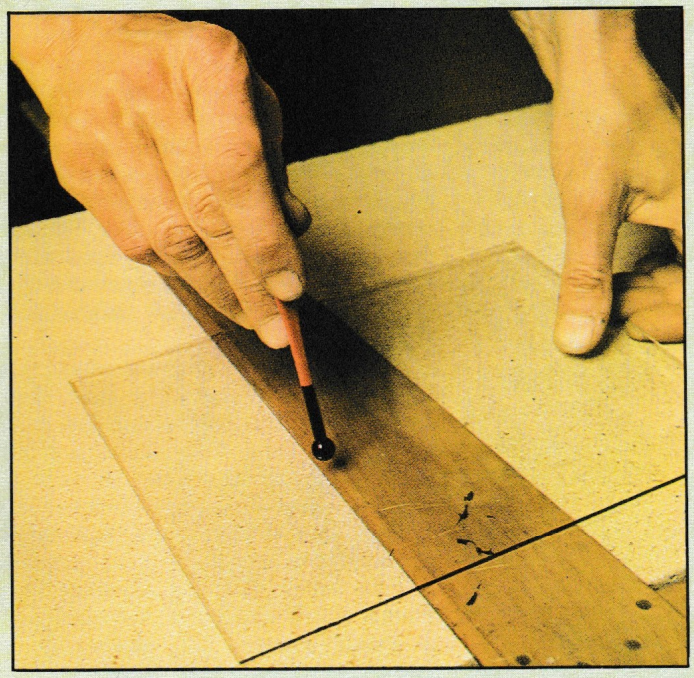
Cutting glass



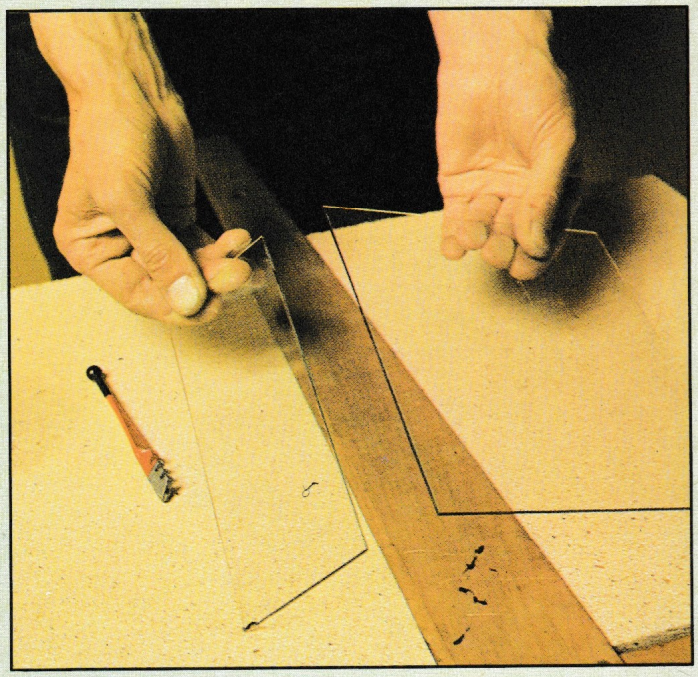
A. *Lay the glass on a cleaned and perfectly level work surface, such as a sheet of chipboard here. Measure off the cutting line accurately, positioning a wooden set square or other suitable straight-edge at the mark. Do not use a wax pencil for marking as this may affect the efficiency of the cutter*



B. *Score a line by running the cutter along the straight edge in a single continuous stroke. A score line is made on one side only. You can lubricate the cutter and the cutting line with white spirit beforehand, but this is only considered necessary for thicker glass. Cut decorative glass on the smooth side*



C. *Place the straightedge beneath the glass and tap firmly along the score line to 'spread' the cut. This stage is particularly important as it reduces the risk of an incomplete break along the score line, which can be difficult to rectify afterwards. To concentrate the effect of the score line, run the cutter only once.*



D. *Arrange the glass sheet so the cutting line coincides with the straightedge, place a sheet of newspaper or card over the glass sheet and push the 'waste' end sharply and firmly downwards to break the sheet along the score line. Small tail pieces can be nibbled away carefully, using pliers or the indentations on the cutter*

Ray Duns

Project

Pine kitchen table

Make this hard-wearing and attractive pine table for your kitchen. It has a really solid top made up from separate strips for an unusual decorative effect, yet you can make it for quite a low cost from stranded softwood battens

Simon Butcher

The traditional pine kitchen table still has a place in today's kitchen. This attractive design is solid enough to provide a useful movable work surface, and you can easily bring it out into the room for a breakfast or occasional dining table.

The table has a sturdy frame made with traditional joinery techniques. The solid pine top is made by laminating battens into a single board for an interesting and unusual decorative effect. Despite being made from solid timber throughout, the materials cost is quite small, since all the wood is low-cost and readily available, and only two sizes are used.

When you are buying the timber, try to select knot and warp free wood as far as possible. If you tell the timber merchant what lengths you will be cutting to, he should be able to supply lengths which will mean the minimum wastage of wood.

Cut all the strips for the top to length allowing the extra 10mm for trimming. You can join them with a simple glued joint under pressure from clamps. For this width of wood, you will need sash cramps, which you can hire. Three are needed. Start with two battens, selecting the straightest from your stock. Oppose the end grains to minimize warping, and glue them under pressure. You can use a square and straightedge to check their alignment and pull them true with the cramps. Allow to dry, then continue adding one strip at a time, checking the alignment until the top is complete. Plane and sand the surfaces dead flat.

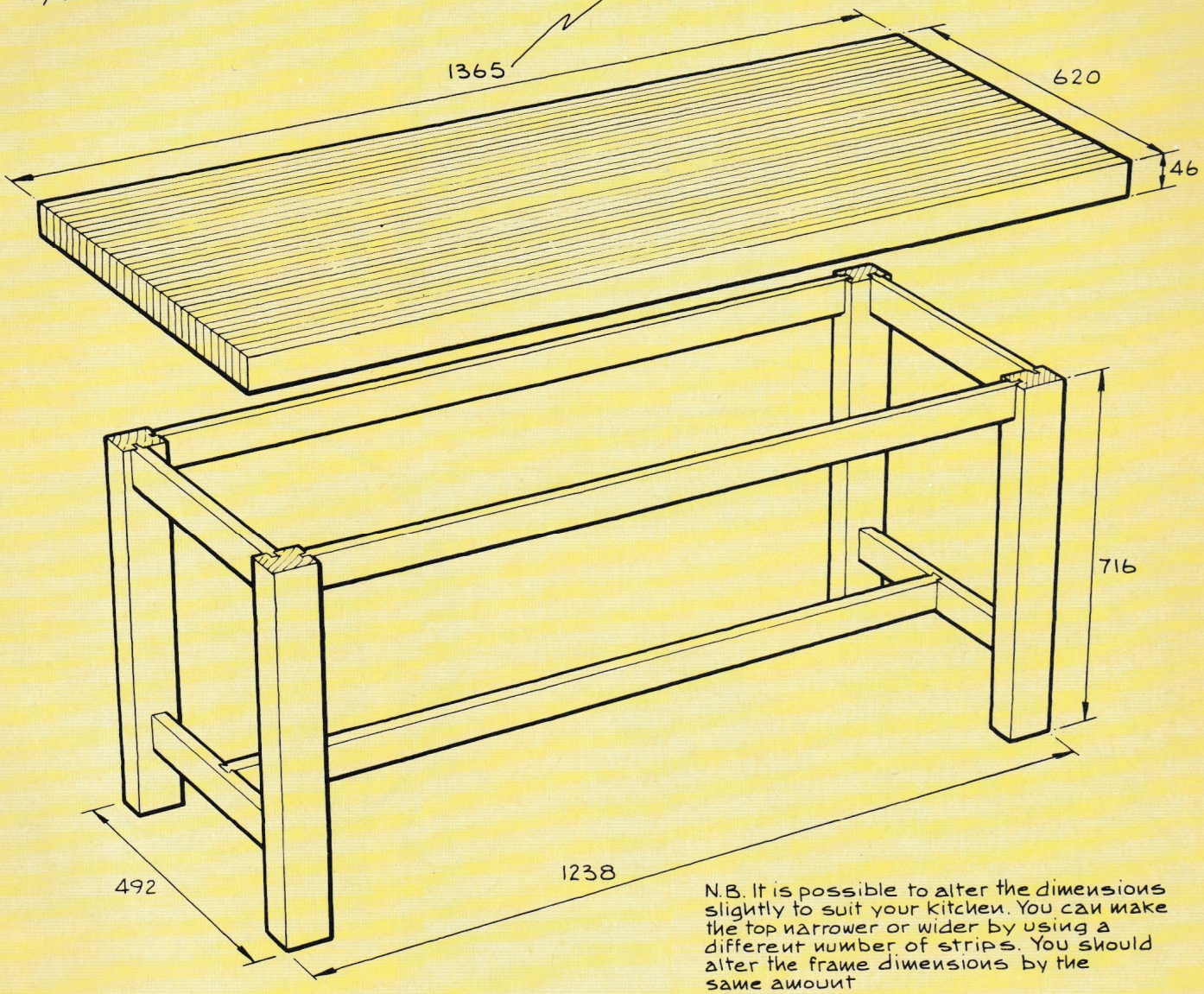
Assemble the mortise and tenon jointed frame, checking that this is square. Fit the top using one of the methods shown. You can either carve your own turnbuttons or use the simpler metal shrinkage plates screwed in the slot which runs against the grain of the top. It is most important not to screw the top directly to the frame. Solid wood is always subject to a small amount of expansion and contraction, which in time would pull the frame out of shape. Using turnbuttons or shrinkage plates allows for this small movement.

Sand all the surfaces and exposed edges before finishing. You can use a filler for any knot holes, but this is liable to show through the finish. Finish with lacquer.

Workplan

The top is 29 strips of 50×25 planed all round softwood joined edge on to form a solid board. Try to select knot-free timber

Cut the battens for the top to 1375 and plane to the finished size after assembly



N.B. It is possible to alter the dimensions slightly to suit your kitchen. You can make the top narrower or wider by using a different number of strips. You should alter the frame dimensions by the same amount

Finish: You should finish the frame and top separately. Sand thoroughly and finish with 2 coats of polyurethane or melamine lacquer. As an alternative, you could use a coloured stain before lacquering

It is most important to get the top thoroughly smooth before finishing. Use a plane and then sand thoroughly. An orbital sander is a great help here. You can use a wood filler or stopping to make good small holes, but it is liable to be visible through the finish

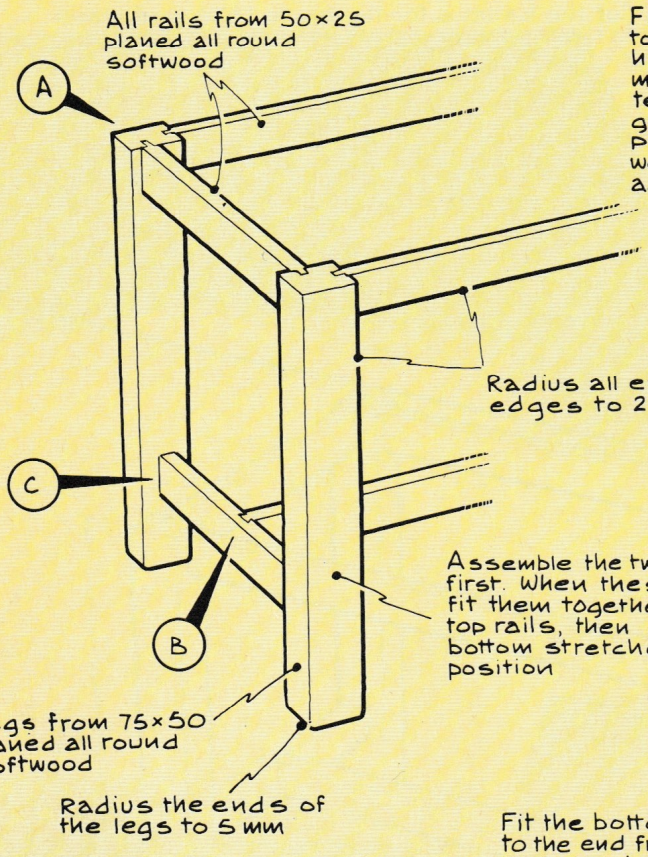
Cutting list

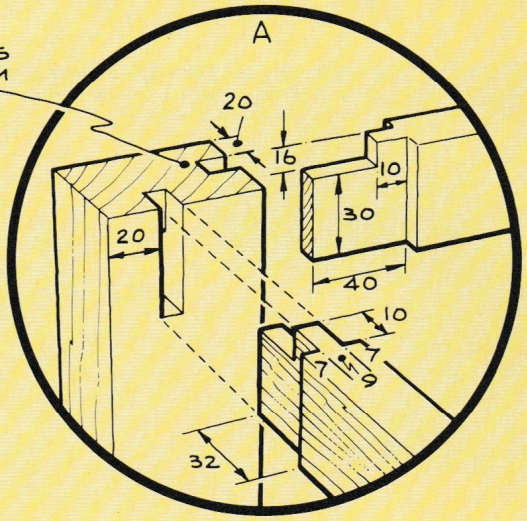
All sizes are in millimetres. Timber is planed all round (PAR).

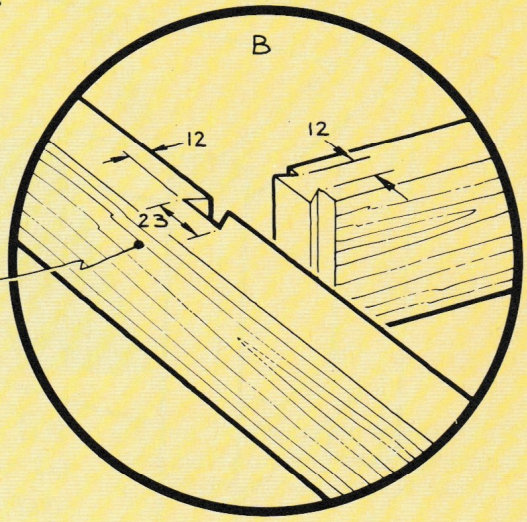
Part	Material	No.	Size
table top	50mm x 25mm PAR softwood	29	1375mm (finish to 1365mm)
top rails (long)	50mm x 25mm PAR softwood	2	1180mm
top rails (short)	50mm x 25mm PAR softwood	2	464mm
bottom rail (long)	50mm x 25mm PAR softwood	1	1170mm
bottom rails (short)	50mm x 25mm PAR softwood	2	476mm
legs	75mm x 50mm PAR softwood	4	716mm

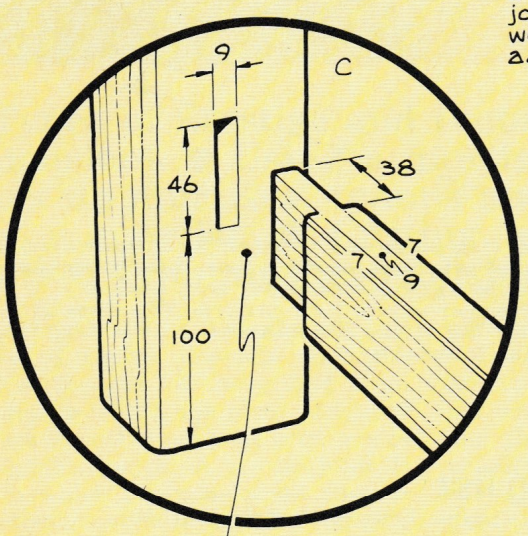
Additional materials: 14 No. turnbuttons from 18mm x 12mm hardwood (or metal shrinkage plates), brass domed-head woodscrews, PVA woodworking adhesive.
Finish : wood filler or stopping, polyurethane or melamine lacquer.

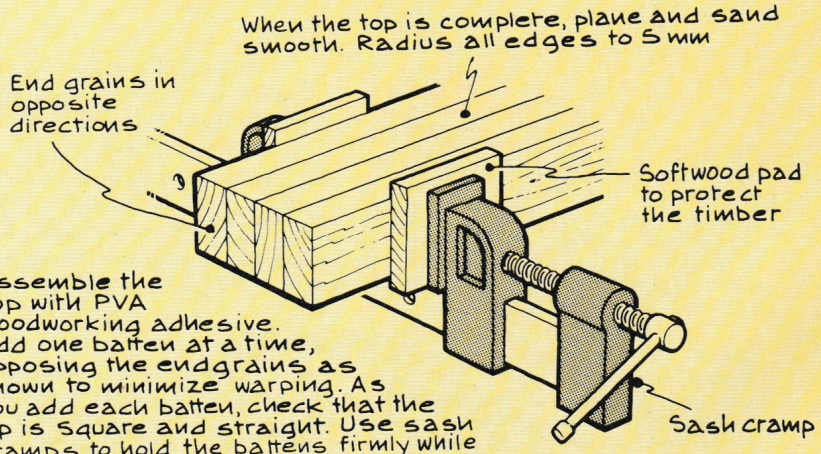
Making the frame


All rails from 50×25 planed all round softwood
A
C
B
Radius all exposed edges to 2 mm
Assemble the two end frames first. When these are dry, fit them together with the top rails, then drop the bottom stretcher into position
Legs from 75×50 planed all round softwood
Radius the ends of the legs to 5 mm





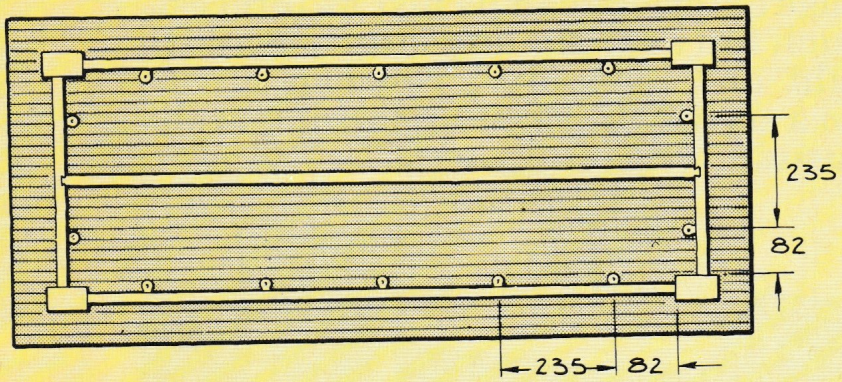



When the top is complete, plane and sand smooth. Radius all edges to 5 mm
End grains in opposite directions
Softwood pad to protect the timber
Assemble the top with PVA woodworking adhesive. Add one batten at a time, opposing the endgrains as shown to minimize warping. As you add each batten, check that the top is square and straight. Use sash cramps to hold the battens firmly while the glue dries and to pull them into alignment
Sash cramp

Assembling the top

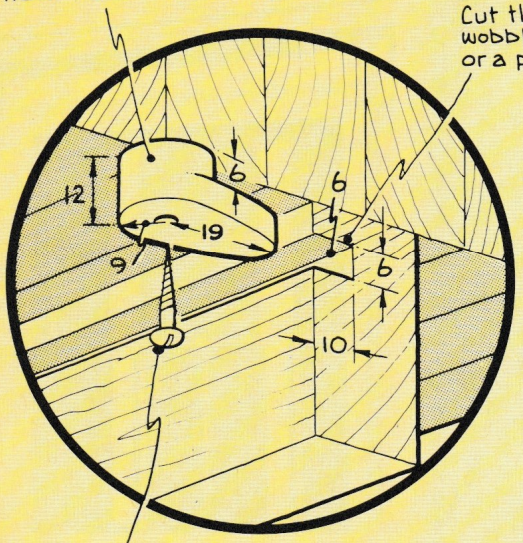
Fitting the top

To fit the top, lay it upside down and insert the frame onto it. Align the frame squarely, then mark and fit the turnbuttons, spaced as shown

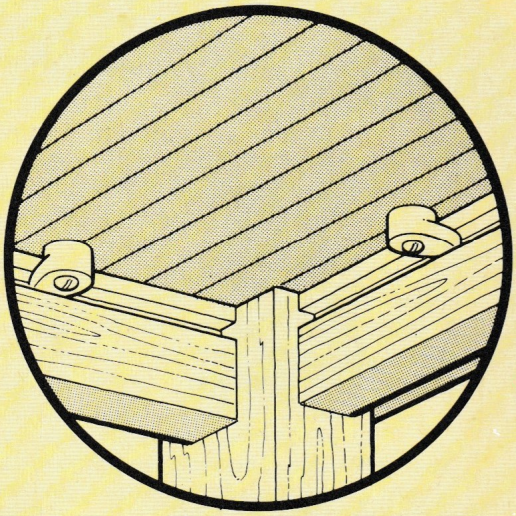


You can shape wooden turnbuttons from hardwood scraps

Cut this channel with a wobble saw, a router or a plough plane

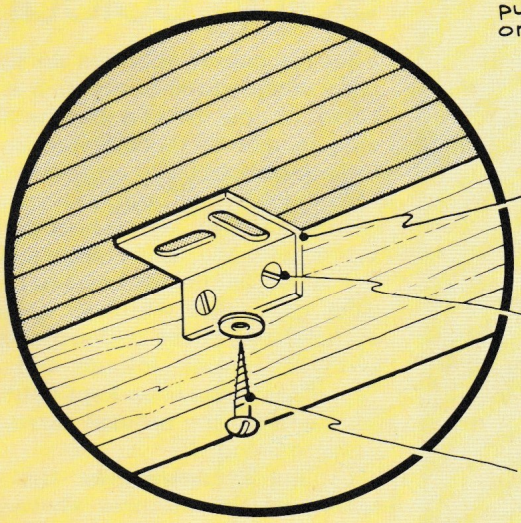


Wooden turnbuttons locate the top firmly but allow it to move slightly. You can turn the buttons to free the channel to allow the top to be removed for transport



38mm No.8 (4·2mm) brass domed head woodscrews

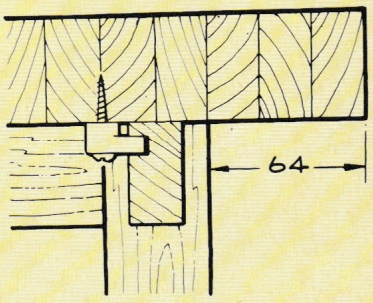
A solid wood top is not completely stable, but will expand and contract slightly with changing atmospheric conditions. You must not fix it rigidly or it could pull the frame out of true. Use wooden turnbuttons, or simpler metal clips to allow for small movements



You can fit metal brackets like this. The slots allow for a small amount of movement

19mm brass countersunk woodscrews

38mm No.8 (4·2mm) domed head brass woodscrews. Do not tighten fully home



The frame should be inset evenly all round. See above for fitting

Advertising Arts

Exciting exteriors

Designing house exteriors can be just as interesting and as much fun as designing interiors. With a little thought and ingenuity, you can create anything from a stylish finish to something really novel and unusual

Elizabeth Whiting

Using colour

Exterior colour schemes do not have to be complicated to create a stunning effect. Simple use of a dominant colour or a couple of related colours effectively highlights the architectural features of a house and provides visual interest to large expanses of wall.

For instance, the colour scheme of the house on the left-hand page simply uses green and white to achieve an overall cool effect to harmonize with the surrounding foliage and plants. The scheme has been kept deliberately simple to let the natural surroundings come to the fore.

In sharp contrast to this simple treatment the pictures above and at right show colour schemes which are meant to catch the eye and brighten up the streets. The row of houses above use a series of related colours which, taken together, have a very smart

Barnaby's Picture Library

effect on the whole street. The neighbours obviously got together and planned the colour scheme to get maximum impact from a range of pastel colours. The house at right is far more brash than the smart terrace above – using a strong red and a related pink to emphasize the decorative window and roof mouldings. Red is a colour that stands out boldly, and the effect is to make this house very noticeable in an otherwise drab street.

The thing to do when designing your exterior colour scheme is to be quite sure of the effect you want before you start. These pictures show that even simple colour treatments can have completely different effects both on the house and the street. Do you want to blend in with the houses around you, or stand out noticeably?

But whether you choose colours that tone and match or which contrast completely, with careful planning you can achieve your object quite simply and without spending a fortune.

Bill McLaughlin

Using designs

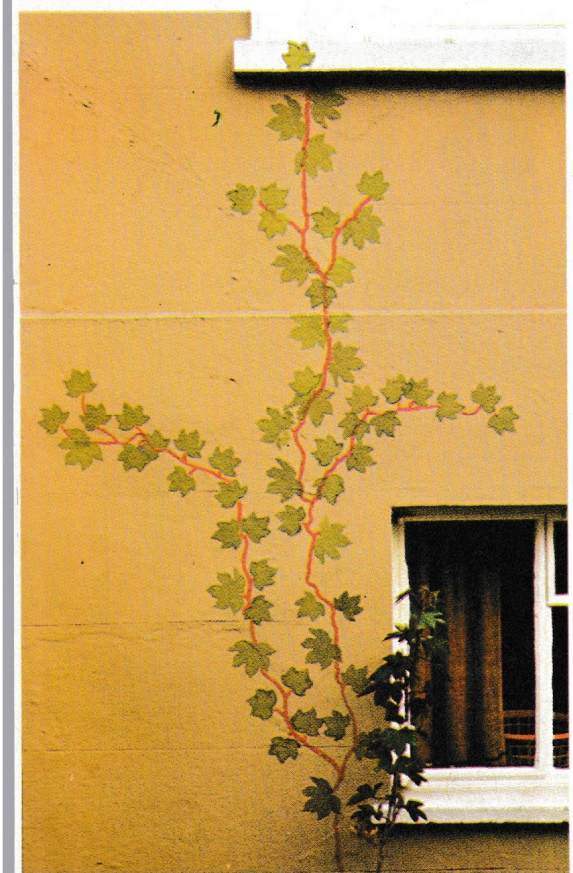
Of course, you do not have to stick to traditional colours and designs – there are many different and exciting methods of enlivening the entire front or just part of the building. Basement flats are often overlooked when it comes to decorative finishes but because they are often below ground level, with a lack of natural light, they need even more consideration when it comes to decoration.

For example, the semi-basement on the left uses bright bold colours and a simple design for maximum impact. The dark blue background causes the clowns and balloons to stand out in vivid contrast. Although it would require a fairly artistic hand to paint a mural of this size directly on to the wall, it is relatively simple to cut out a paper pattern and trace it on the wall before filling in the details.

A simple design on a smaller scale can look just as effective, however, and is a better choice for a first attempt. It is also a useful way of disguising faults and cracks in the wall. For example, the leaf design below hides a nasty crack but has been cleverly done to give the appearance of growing from the pot along with the real plant.

And you do not have to choose a specific theme for a design. You can use any simple shapes like diamonds, squares, rectangles, even colourful fruits like bananas, strawberries and apples to build up a picture. Boldly coloured zig-zag lines, travelling vertically or horizontally around the house can also look very effective.

Bill McLaughlin



Jessica Strang

A more textured finish can be achieved with stucco effects. Only a portion of the house above is finished in this way but it gives it a certain individual character. Although moulded casts are available, this work is best carried out by a professional.

Many old style houses have decorative plaster wall plaques which are often neglected and are virtually invisible under layers of dirt and grime. But cleaned up and painted over they can become a decorative feature of the wall. The one on the right, for instance, has had its details picked out in coloured paint to make it stand out against the natural brick.

Bill McLaughlin

Plants and hedges

Here are two unusual ideas to enhance your home using plants and flowers, which do not always have to actually be outside to improve the external appearance of the house. For instance, the windows in the house above have been filled with flowering plants that act as a window dressing and also create a stunning display inside the room.

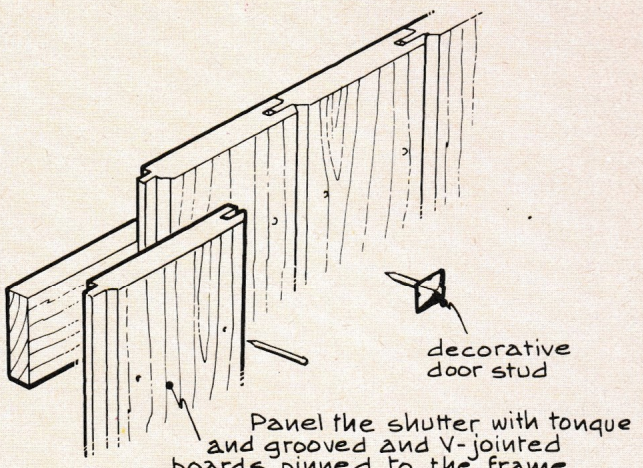
The hedge at right has been carefully trimmed and tailored to grow into a decorative feature of the house – and display the house number.

If the prospect of years spent weilding and trimming shears does not appeal to you, try a more conventional approach and use potted shrubs around the walls or cultivate an ivy climber over the brickwork.

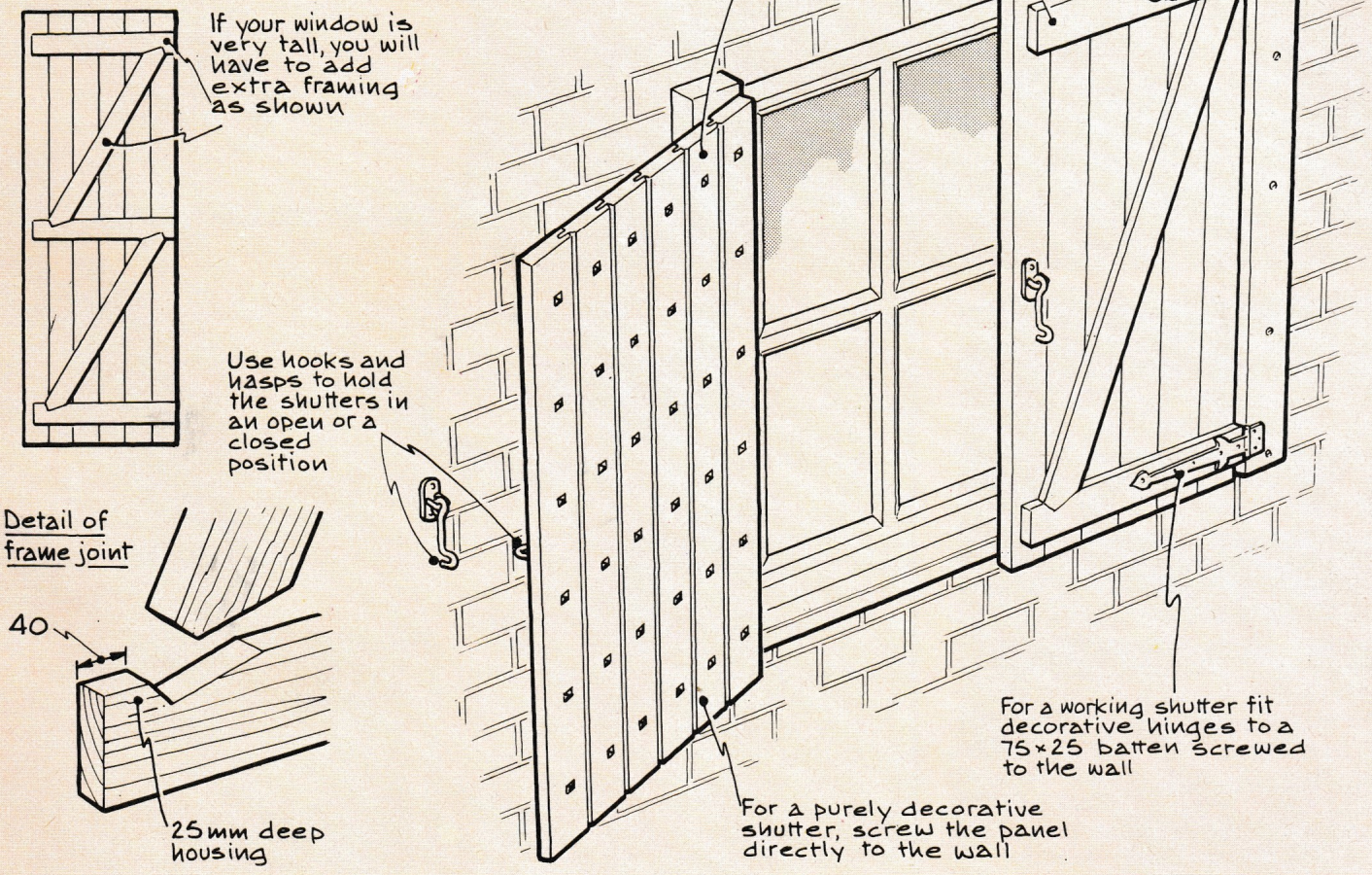
Window boxes, if planted with a variety of plants that flower at different times of the year, can provide a really stunning seasonal display.

Syndication International

Decorative shutters


decorative door stud
Panel the shutter with tongue and grooved and V-jointed boards pinned to the frame. Add decorative studs afterwards

Decorative shutters add interest to your home, and working ones can help you keep the heat in. Make them from tongued-and-grooved boards on a batten frame. Measure your windows to work out the size you need, making them half the width and slightly higher than the frame. For a decorative shutter, screw the panel to the wall—for a working one, hinge it to a batten. Treat thoroughly with timber preservative and add decorative studs.


Make each shutter half the width of the window
Frame from 75×25 batten
If your window is very tall, you will have to add extra framing as shown
Use hooks and hasps to hold the shutters in an open or a closed position
Detail of frame joint
40
25mm deep housing
For a working shutter fit decorative hinges to a 75×25 batten screwed to the wall
For a purely decorative shutter, screw the panel directly to the wall

Advertising Arts

Light switches

● Lighting switches ● Dimmer switches ● Light bulbs ● Two-way switching circuits ● Wiring two-way switches ● Converting one-way to two-way switching ● Fitting a dimmer switch

Having light available at the flick of a switch is something we have all come to take for granted. But there is more to domestic switching circuitry than the simple on/off device found in most homes. Modern innovations like two-way switching and dimmer switches make the lighting arrangements in your home a great deal more convenient and versatile.

Lighting switches

The type of switch most commonly installed around the home nowadays is an all-insulated unit with rocker action (fig. A). This has a plastic or metal cover plate and is mounted on a standard, square-moulded plastic or metal box of the same depth as your plaster. Up to three switches can be mounted on a single one-gang switchplate, enabling more than one light to be switched independently from the one position.

As most switches of this type are single-pole, regulations require that they be inserted into the live pole of a circuit so that the light is isolated from the live supply when the switch is off. In no circumstances should a single-pole switch be inserted into the neutral pole: if it were, the light fitting would be live even when the switch was in the off position and it appeared to be dead.

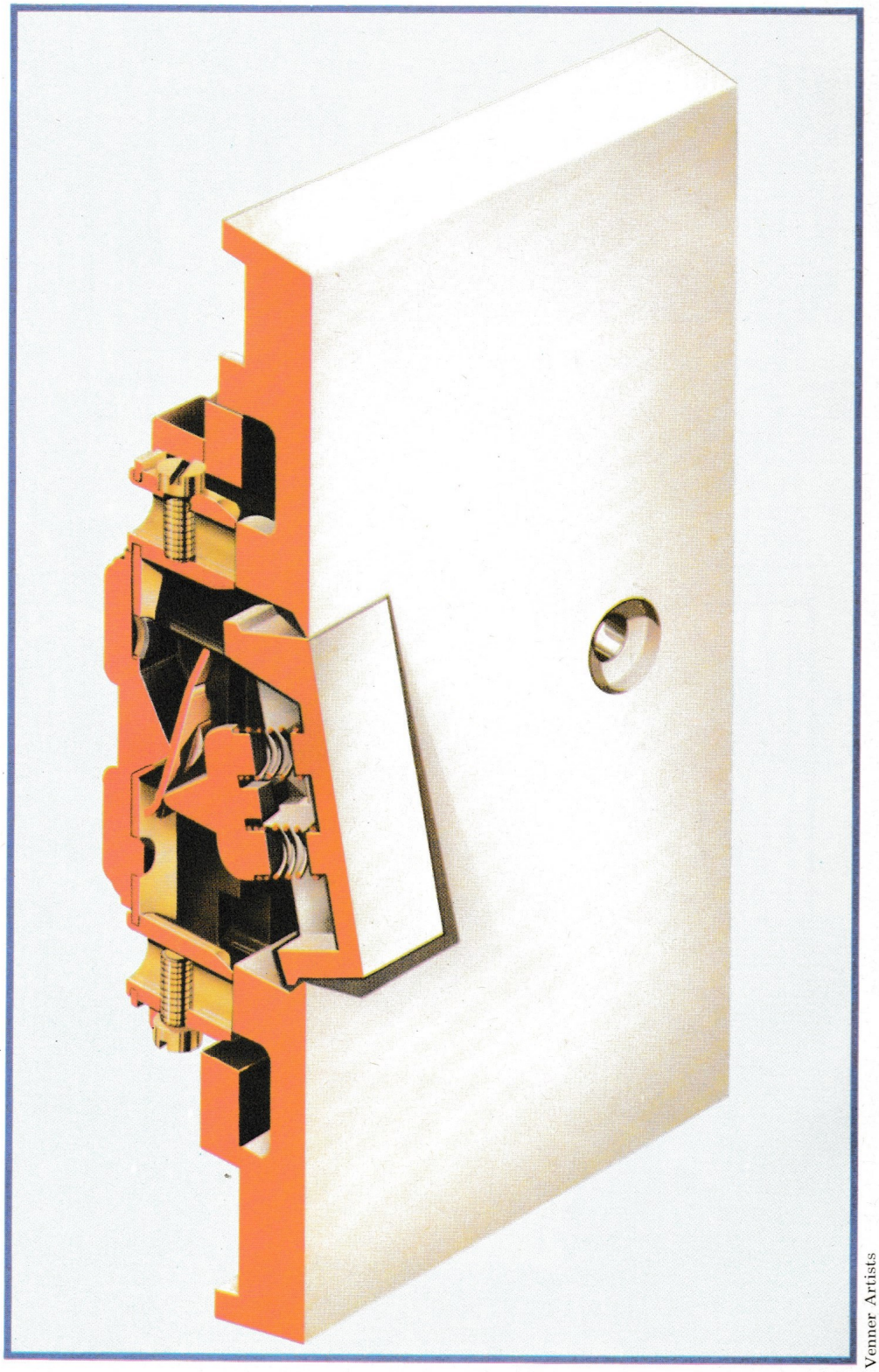
Dimmer switches

As an alternative to a simple on/off switch, a dimmer switch greatly increases the level of finger-tip control you have over your lighting.

A dimmer switch is an electronic device, the main components of which are a semi-conductor called a *triac* and a printed circuit. Modern dimmer switches also contain a 2 amp fuse to protect the triac from the surge in current which occurs when a light bulb blows.

By rotating the knob of the dimmer, you can reduce the intensity of the light from the full, normal strength to any lower level; an effect which is achieved by blocking out part of the incoming current. And because the dimmer does not, itself, consume

Below: *A cross-section of a rocker switch. This is the type of switch most commonly installed around the home and is an all-insulated unit with rocker action*



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electricity, it can save energy and help to reduce your electricity bills. Dimmers also reduce the initial power surge in light bulbs, thus extending their life.

There are various types of dimmer switch on the market, the simplest and cheapest of which have a rotary dial which switches the light on and also controls the brightness. But this means that each time you switch on, you have to reset the desired level of illumination. Another type gets round the problem by having a normal rocker on/off switch alongside a rotary dimming wheel and a third type has a single knob with push/on, push/off switching action for controlling the brightness of the light.

A more recent development in dimmer switches is the 'touch' dimmer. This has no moving parts, but is fitted instead with two separate touch pads. A quick tap of the finger on the upper pad turns the light on and a continued gentle touch raises the level of brightness. Touching the lower pad decreases the light intensity, and a quick tap turns the light off.

Another version of the touch dimmer incorporates a time lag device: a touch of the finger switches on the light which then remains on for any desired length of time up to five minutes. At the end of the time lag, the light slowly fades and remains at a residual safety level or switches itself off. A time lag touch dimmer is particularly useful for controlling the lighting on stairways and corridors.

When choosing dimmer switches, bear in mind that fluorescent lights require a special type and that alterations must be made to the circuitry of the light unit.

Allowance must also be made if you intend to use a dimmer to control one of the more specialized lighting appliances such as low-voltage spot lamps or halogen lamps. Switch manufacturers usually supply a leaflet showing which of their models to use, dependent on the wattage and type of bulbs, or any particular lamp arrangement. Most manufacturers also provide a guarantee with the more expensive types of switch.

Two-way switching

By including a second switch for a light at some convenient location, you can do away with minor frustrations like having to get out of bed to switch a light off—or walk to the end of a dark corridor to switch it on.

Two-way switches work independently in the sense that both make or break the circuit no matter what order they are used in, but are related electrically in that they are both parts of the same circuit wiring.

Whereas a normal one-way switch has two terminals on the back of the switchplate for the live feed and live return (see pages 240 to 244), a two-way switch has three terminals marked 'Common', L1 and L2.

In the basic two-way switching circuit, the live feed of the circuit is connected to the 'Common' terminal of one switch, the live return to the 'Common' terminal of the other, and the L1 and L2 terminals of both switches are linked by a pair of conductors which are sometimes termed 'strapping' wires (fig. C).

Two-way switches are also available in cord-operated versions for fitting in a bathroom, over bedheads and elsewhere around the home.

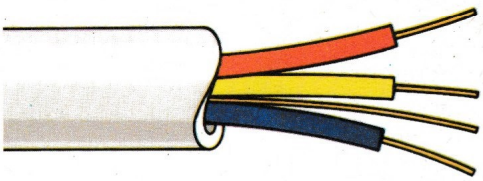
Damaged switches

If your light switches are of the old tumbler type, it is likely that some have become cracked or that their fixing screws have worked loose during years of use. In this case, replace them with modern rocker switches. Similarly, any modern switch which is cracked or damaged must be replaced immediately.

To replace a damaged switch, turn off the electricity supply at the mains (see pages 121 to 125), remove the switch-plate from its box and disconnect the wires attached to the terminals.

If the damaged switch is a two-way switch, note which wire goes to which terminal and be sure to replace it with a switch of a similar type. If more than one wire is connected to any one terminal, keep these joined together and treat them as one wire. Wire up the replacement switch in the same manner as the old one and screw the cover plate into place on the mounting box.

If you have a cord-operated switch which is sluggish in action, turn off the power, remove the cover and squirt a drop or two of easing oil into the mechanism. When a cord snaps or is pulled out of its socket, it is better to



A. *In 1.0mm² three-core with earth cable, the wires are coloured yellow, blue and red for easy identification at the terminals*

Light bulbs

An electric light bulb consists of a tungsten wire spiral filament enclosed in a glass bulb from which the air has been removed. The absence of oxygen allows the filament to glow at white heat without burning out. Bulbs of 40 watts upwards are filled with an inert gas such as argon, allowing the filament to burn at an even greater temperature. As the circulation of gas inside the bulb causes cooling, the filament is wound into a tight spiral to reduce this effect.

A more recent development is the coiled-coil bulb in which the filament is wound around itself again. This allows it to burn even hotter—thus producing more light—without using any more electricity.

Electric light bulbs are designed to give maximum light output with a reasonably long life. The life expectancy of the average bulb is 1000 hours burning though some cheap bulbs burn out much sooner than this. Fluorescent tubes, on the other hand, have a life expectancy seven times greater than that of the ordinary bulb and emit at least three times as much light for an equivalent wattage.

The bulbs most commonly used in the home are pear or mushroom shaped and can have a clear, 'pearl' or white finish. The inner surface of a pearl bulb is roughened so that it produces a less glaring light and casts softer shadows than a clear bulb. The inside surface of a white bulb is coated with a white silica powder and, as a result, the bulb produces even softer lighting and shadow.

As an alternative to the pearl or mushroomed shaped bulb, there are a number of decoratively shaped bulbs, such as twisted candle lamps and architectural lamps, that can add a touch of glamour to the lighting arrangements of a home.

buy and fit a replacement cord.

If a dimmer switch fails, isolate the supply, remove the switchplate and check that the wiring is correct and intact. If it is, the problem is probably due to a current overload having damaged the triac or some other component. In this case, the dimmer will have to be returned to the manufacturer for repair.

One-way to two-way switching

Almost any one-way switched light can be converted simply and economically to a more convenient two-way system. For this you require two two-way switches: one to be fitted in place of the existing one-way switch and the other for fitting in your chosen new position.

Before you buy the new switches, turn off the electricity supply at the mains and remove the switchplate on the existing switch. If it has three terminals on the back marked as described above, it is a two-way switch wired for one-way operation and you need buy only one new two-way switch.

For mounting the wall switches you will need one or two mounting boxes, depending on whether or not the existing box is of the standard modern type and therefore able to take a new rocker switch. The boxes can be either flush- or surface-mounted (see pages 240 to 244).

The cable you need for wiring the switches is of the 1.0mm² three-core with earth type (fig. A). Unlike twin PVC sheathed cable, the wires of three-core cable are coloured red, yellow and blue with a bare earth wire. Buy enough to run from the existing switch position to the additional switch, allowing for connections at both ends.

You also need a length of green and yellow PVC sleeving for sheathing the ends of the bare earth wires and some red insulating tape to stick around the yellow and blue wires so that they are easily identified as live.

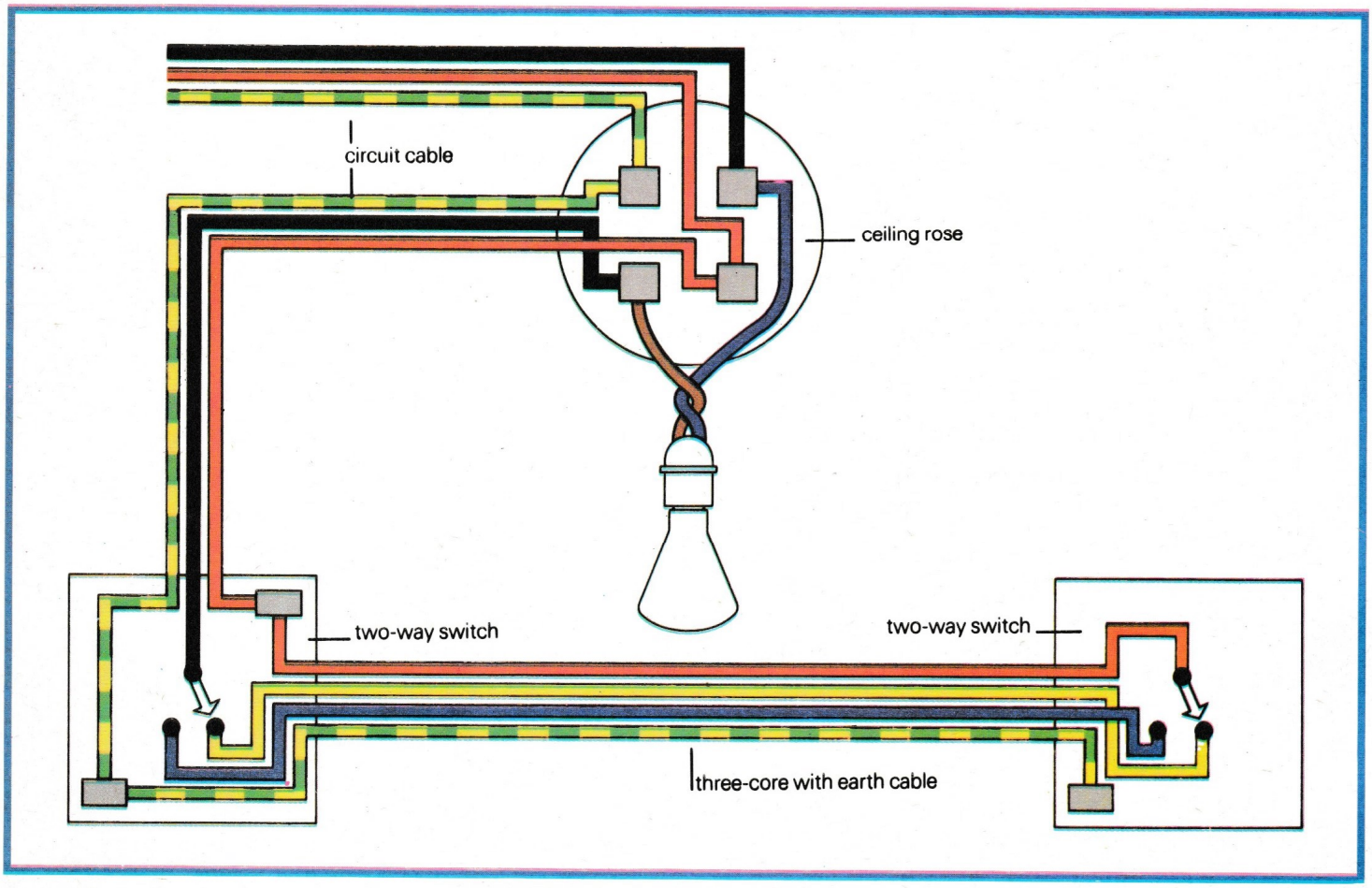
If you decide to instal flush switches and the cable is to be sunk into the plaster, protect the cable with 16mm oval PVC conduit.

If you are installing two-way switching in a room with two doors, it is usual to place the switches near the doors so that you can chase the plaster out for the cable to run up the side of the architrave. If, on the other hand, you intend to run the new cable over the surface of the wall, the architrave can be used to secure the clipping. Better still use a box section conduit with a snap-on lid section: this can be stuck to the wall with contact adhesive. Box section conduit is not only safer than bare surface wiring but also looks a lot neater.

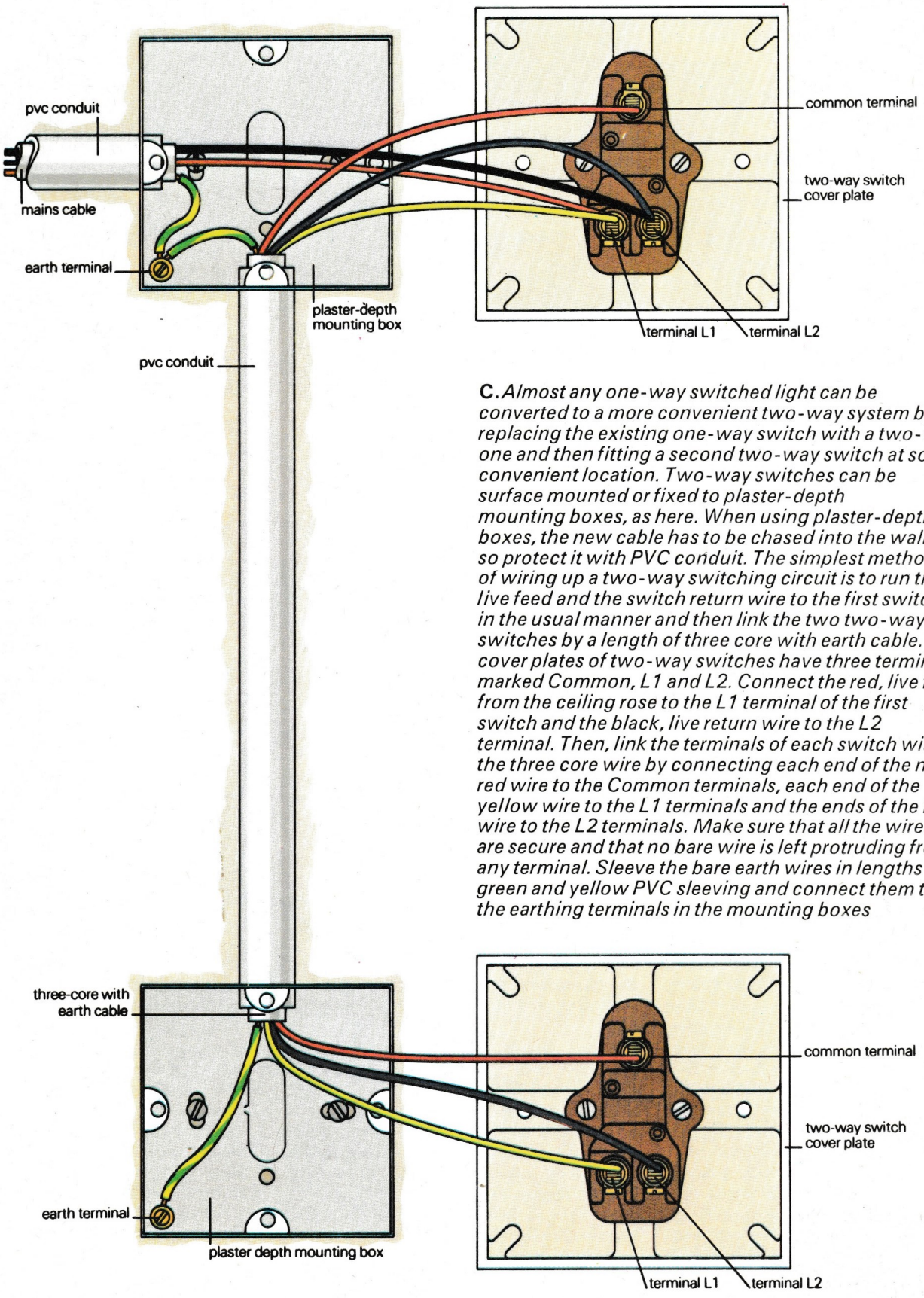
Wiring a two-way switch

Begin by turning off the electricity supply at the mains, then remove the cover plate of the existing switch and unscrew the wires attached to the terminals. Next, prepare any cable chases and the recess for the new box. If the latter is flush mounted, knock out one of the punched holes in the back for the cable and fit the box into place (see pages 240 to 244).

Where necessary, instal your PVC conduit then run the new cable from



B. *Diagram of a two-way switching circuit. The two switches are linked by 1.0mm² three-core with earth cable and work independently of each other to make or break the circuit to the ceiling rose*



C. *Almost any one-way switched light can be converted to a more convenient two-way system by replacing the existing one-way switch with a two-way one and then fitting a second two-way switch at some convenient location. Two-way switches can be surface mounted or fixed to plaster-depth mounting boxes, as here. When using plaster-depth boxes, the new cable has to be chased into the wall, so protect it with PVC conduit. The simplest method of wiring up a two-way switching circuit is to run the live feed and the switch return wire to the first switch in the usual manner and then link the two two-way switches by a length of three core with earth cable. The cover plates of two-way switches have three terminals marked Common, L1 and L2. Connect the red, live feed from the ceiling rose to the L1 terminal of the first switch and the black, live return wire to the L2 terminal. Then, link the terminals of each switch with the three core wire by connecting each end of the new red wire to the Common terminals, each end of the yellow wire to the L1 terminals and the ends of the blue wire to the L2 terminals. Make sure that all the wires are secure and that no bare wire is left protruding from any terminal. Sleeve the bare earth wires in lengths of green and yellow PVC sleeving and connect them to the earthing terminals in the mounting boxes*

Venner Artists

the existing switch position to the new position, clipping it to the wall surface or feeding it through the conduit as necessary. Make good any removed plaster at this stage.

Remove about 150mm of outer sheathing from each end of the cable, leaving 12mm protruding into each box, then strip about 10mm of insulation from the end of each wire and double the ends over. Bind a short piece of red insulating tape around each yellow and blue wire, about 20mm from the end, and slip a length of green and yellow PVC sleeving over both bare earth wires and the earth wire of the original cable, if not already sleeved. If there is no red tape around the existing black insulating wire, put a piece on at this stage as this wire also carries live current.

Now wire up the two switches as follows:

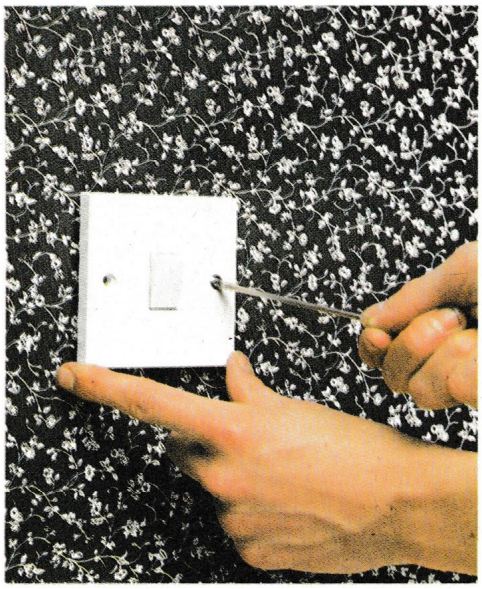
- At the original switch position, connect the earth wires to the box earth terminal
- Connect the original red wire and the new yellow wire to the terminal marked L1
- Connect the existing black wire and the new blue wire to the terminal marked L2
- Connect the new red wire to the 'Common' terminal
- At the new position, connect the red wire to the 'Common' terminal
- Connect the yellow wire to the terminal marked L1
- Connect the earth wire to the box earth terminal

Lay the wires neatly in the boxes and fix the switchplates in place with the screws provided. After you have turned on the power at the mains, the new switching arrangement is ready for testing.

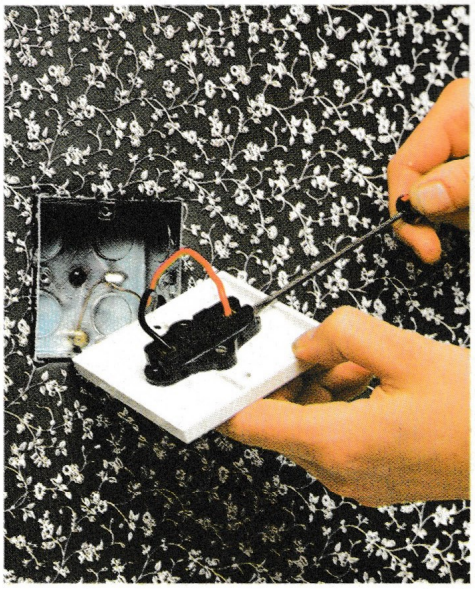
Fitting a dimmer switch

To replace a one-way switch with a standard dimmer, begin as always by turning off the power supply then remove the cover plate of the existing switch and disconnect the two wires on the back. Try the dimmer switch plate in the wall box and arrange the wires so that they will not be trapped by the works of the dimmer. This is important: some dimmers do not have covers on the back and the printed circuit may be damaged if wires foul against it.

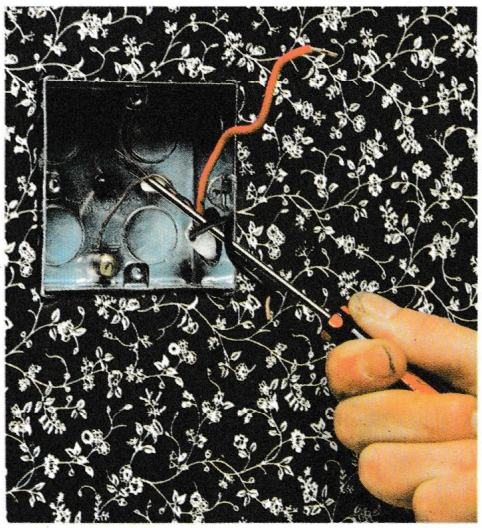
As the black wire carries the current back from the switch, and is therefore also live, it is best to clearly mark it as live at this stage by wrapping it with a piece of red insulating tape (fig. 5).



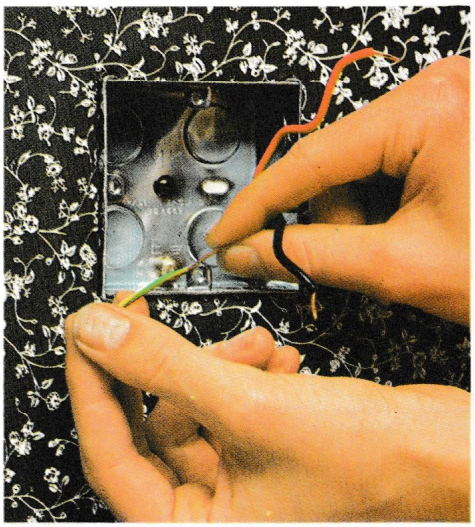
1 *To replace a one-way switch with a standard dimmer, turn off the electricity supply and unscrew the switch cover plate*



2 *With the cover of the existing switch removed from the mounting box, unscrew the terminal screws to free the wires*



3 *If the earth wire connected to the box terminal is bare, loosen the terminal screw and free the wire so that you can sleeve it*



4 *Cut a length of green and yellow PVC sleeving and slip it over the end of the earth wire so that about 6mm of bare wire is left protruding*

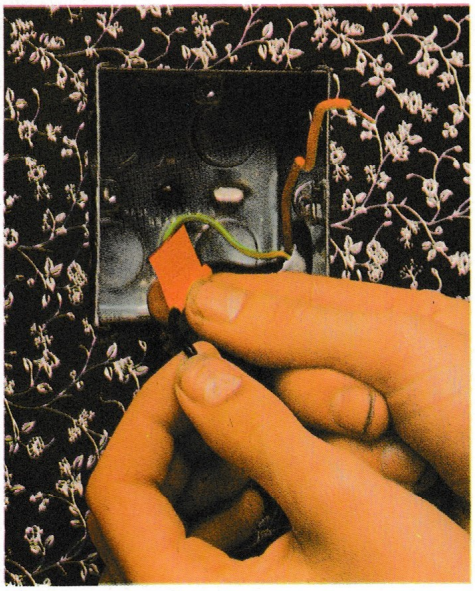
Now check that the wires fit properly into the terminal holes on the back of the dimmer switch plate. Some dimmers have terminals with holes that are much shallower than those of a normal switch. If this is the case, trim each wire with a pair of wire clippers to make sure that no bare wire is left protruding from the terminals (fig. 6).

Having made sure that the new dimmer fits neatly into the box, connect the two wires as for a normal switch, following the manufacturer's wiring instructions, or diagram.

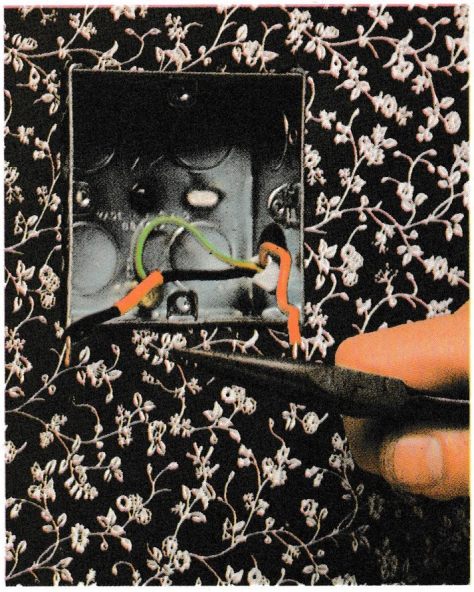
If the switchplate of the dimmer is metal, it will have an earth terminal on the back. Make sure that this is connected to the box earth terminal by a short length of green and yellow PVC insulated wire (fig. 4).

Now fit the switch into place, making sure that no wires are trapped, and screw in the fixing screws. Switch the dial off if it has been rotated to the 'on' position. Turn the power on again and your new dimmer is ready to provide a change of atmosphere at the turn of a dial.

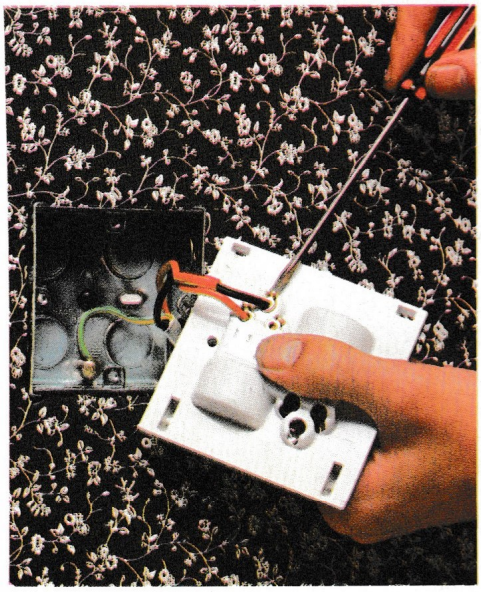
If you want to replace a two-way



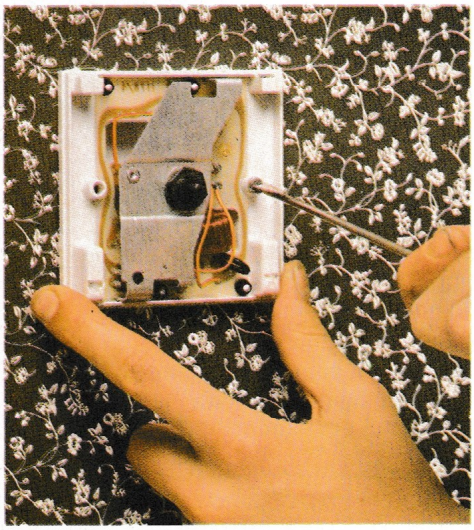
5 *As the black wire in a switch is also live, it is best to indicate this fact by wrapping a piece of red insulating tape around it*



6 *If the terminal holes in the new dimmer are less deep than those in the switch, trim the wires so that no bare end is left protruding*



7 *When both wires have been trimmed to length, connect up the switch following the manufacturer's wiring instructions*



8 *Use the mounting screws provided to fix the switch plate to the mounting box, then attach the cover which houses the rotary switch*

switch with a dimmer, make sure that the type you choose for the job has three terminals on the back. Dimmers which incorporate a rocker switch alongside the dial or a push-on push-off switch are the most suitable. Bear in mind, too, that you can only fit one dimmer switch to a two-way arrangement, leaving a conventional rocker switch at the other position.

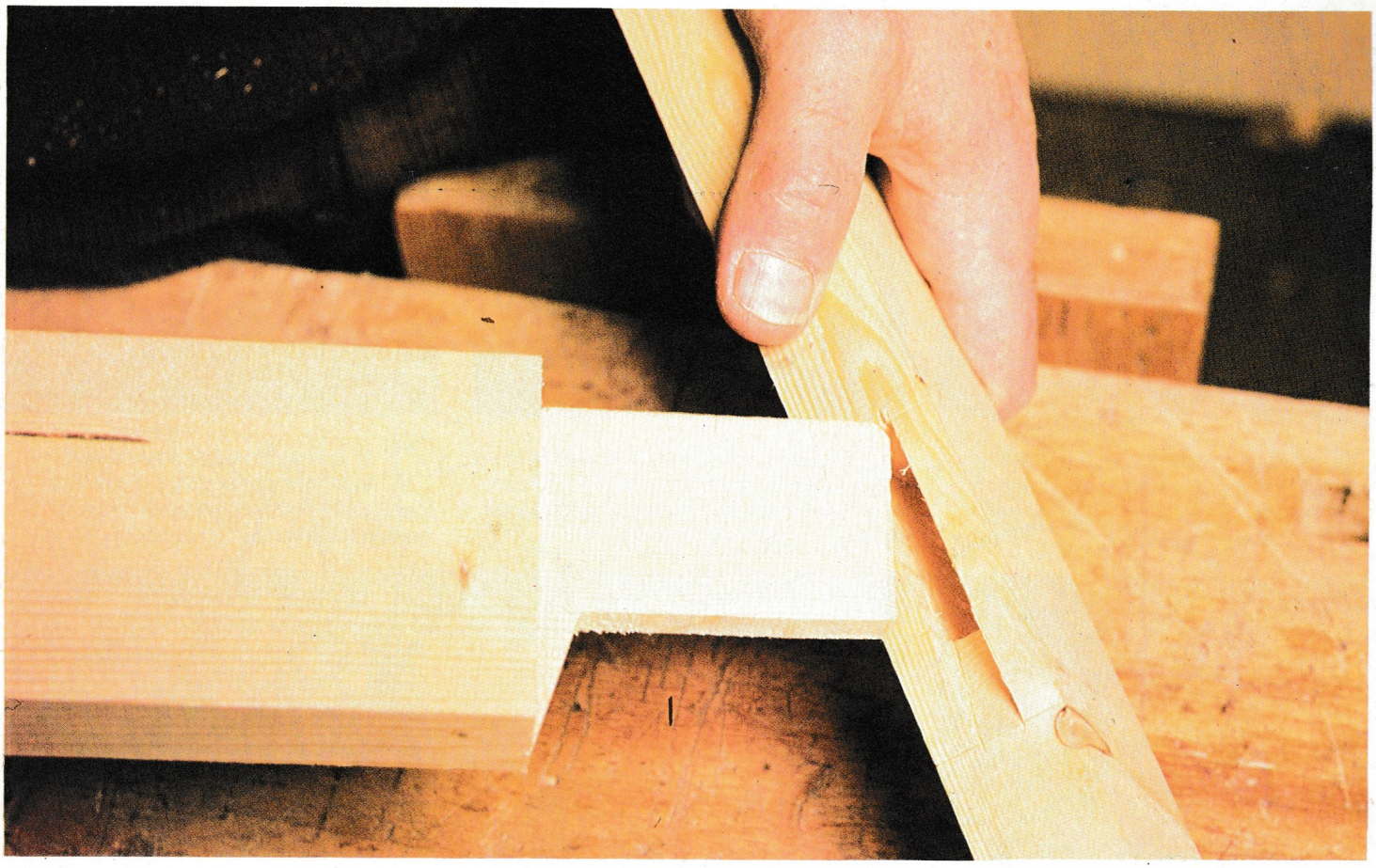
Touch dimmers and time lag dimmers will replace both one-way and two-way rocker switches, the connections being made according to the manufacturer's instructions.

Peter Dazeley

9 *With the cover plate of the new dimmer switch in place, rotate the dial into the 'off' position, if it has been turned on during the fixing process.*

Now turn on the electricity supply at the mains once more and the performance of your new dimmer switch is ready to be tested

Mortise-and-tenon joints



Ray Duns

● Types of mortise and tenon joint ● Rules for dimensions ● Using a mortise gauge ● How to mark up mortises, tenons and haunches ● Cutting a mortise ● Cutting a tenon ● Wedged joints ● Trimming and finishing

The strength of a joint connecting two pieces of timber depends on three factors: the size of the gluing area, the way in which one piece of timber encases the other, and the accuracy of the finished work. A strong joint is one in which one component encases the other in such a way as to ensure a large gluing area without either component being unduly weakened. The mortise and tenon joint satisfies these requirements best of all.

Types of mortise and tenon

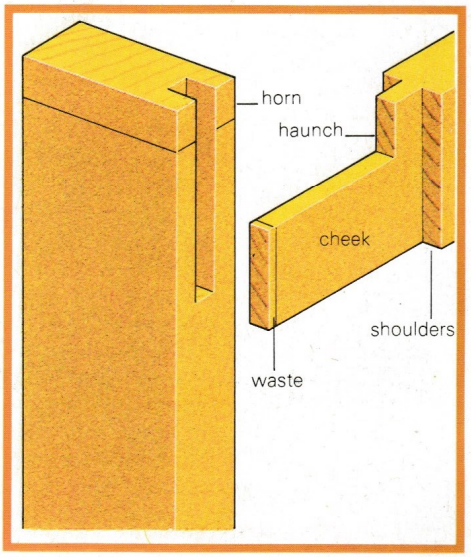
Mortise and tenon joints are used in a wide variety of work, ranging from course carpentry through joinery to the finest cabinet work. Their most common applications are in roofing, window frames and door frames, stud partitions, and tables and chairs.

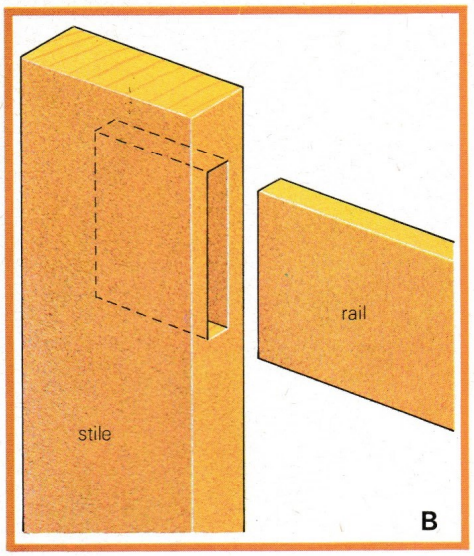
The component parts of the joint are known as the *stile*—the vertical member which usually holds the mortise—and the *rail*—the horizontal member usually with a tenon at each end. In the simplest mortise and tenon joint, used only in the roughest carpentry work, the rail fits straight in to a mortise in the stile (fig. B). More usually, though, the rail is trimmed to leave 2-6mm shoulders on either face (fig. A). These effectively hide any gaps—such as those caused by a slack-fitting tenon or by careless cutting-out of the waste in the mortise.

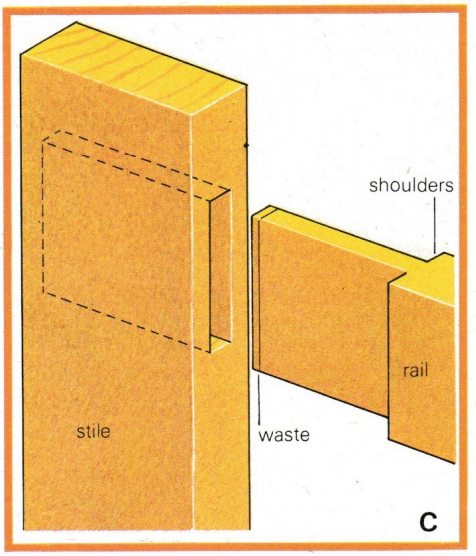
This type of mortise and tenon joint is called a plain joint. It can also be classified according to the way in which the mortise and tenon meet.

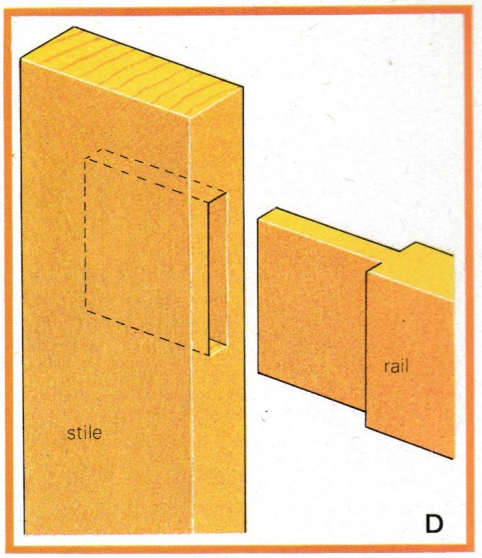
Above: *A typical mortise and tenon joint incorporating a secret haunch to stop the components twisting*

A. *A conventional haunched through joint of the type found on many older window and door frames*









The four traditional forms are shown (figs C to F)—*through*, *stub or 'blind'*, *through wedged*, and *foxed wedged*.

An additional complication—*haunching*—is sometimes introduced to stop the rail from twisting, and to take strain off the tenon (fig. A). And on large rails, the gluing area can be increased by employing a double tenon with haunching (fig. G)—the strongest mortise and tenon joint.

Some of the above permutations are occasionally combined, making the whole business of mortise and tenon joints look far more complicated than it really is. For example, on high-quality door frames you may find that some of the joints are of the foxed wedged double tenon type.

In fact, the only joints which are really difficult to make are those where the stile and rail are moulded —requiring you to scribe and cut complicated shapes. These are described further on in the course.

Rules for dimensions

The thickness of the tenon should be around one-third of the thickness of the stile, but should be set finally to match the width of the nearest available size of chisel.

The width of the tenon should not exceed five times its own thickness, which in turn will determine whether a single or double tenon is used. But if the joint is positioned at the top of the stile, it is usual to divide the tenon width into three parts—two for the tenon and one for the haunch (fig. K). Where the frame of which the joint is a part is to take a panel of some sort and is grooved, the haunch forms part of this. Otherwise, it is customary to make a groove to match a *secret* haunch (fig. 13).

Where the rail is wide—over about 75mm—it is usual to employ a double tenon. In this case, you can either divide the rail width by four and take each tenon width as one-quarter (fig.

B. *A simple stub joint in which the tenon has no shoulders. This is used only for the simplest frameworks*

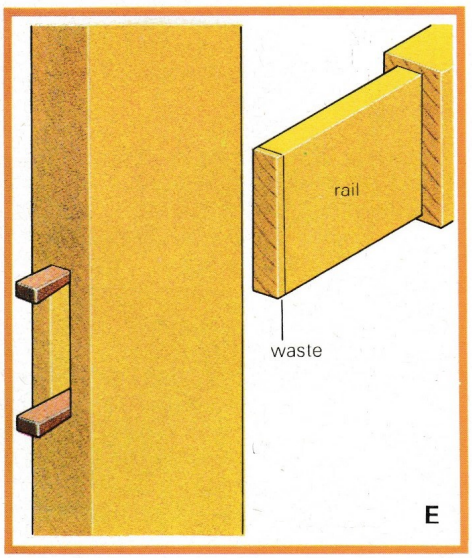
C. *In the plain through joint, the tenon passes right through the stile and is trimmed off after assembly*

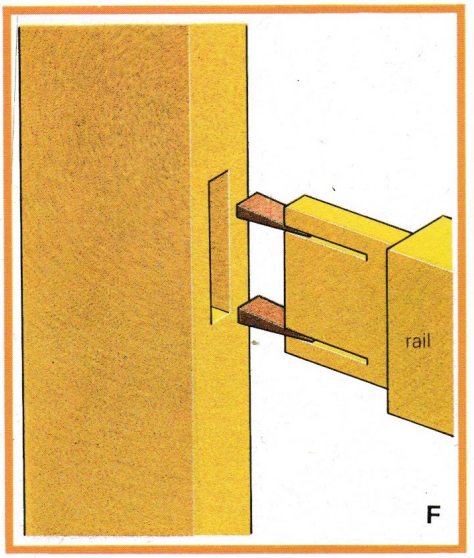
D. *For a stub joint, the mortise in the stile must be cut to exceed the length of the tenon by 3-5mm*

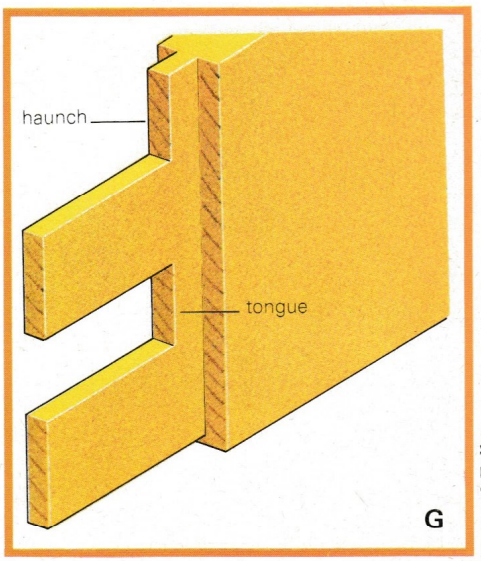
E. *For a through wedged joint, wedge room must be cut on either side of the mortise. The wedges are driven in after the joint has been assembled*

F. *The foxed wedged joint, which incorporates secret wedges, is little used today thanks to the strength of modern woodworking adhesives*

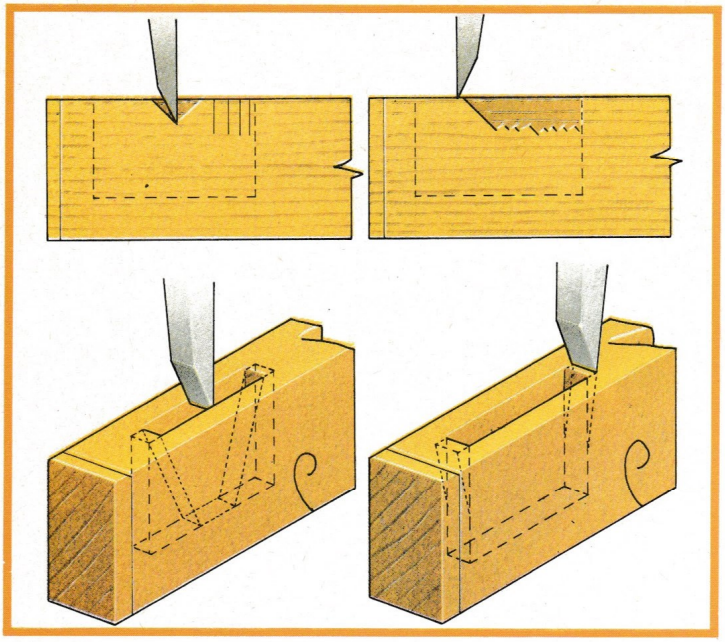
G. *A double haunched joint has exceptional strength. The waste between the tenons is cut with a coping saw taking care not to weaken the tenons*





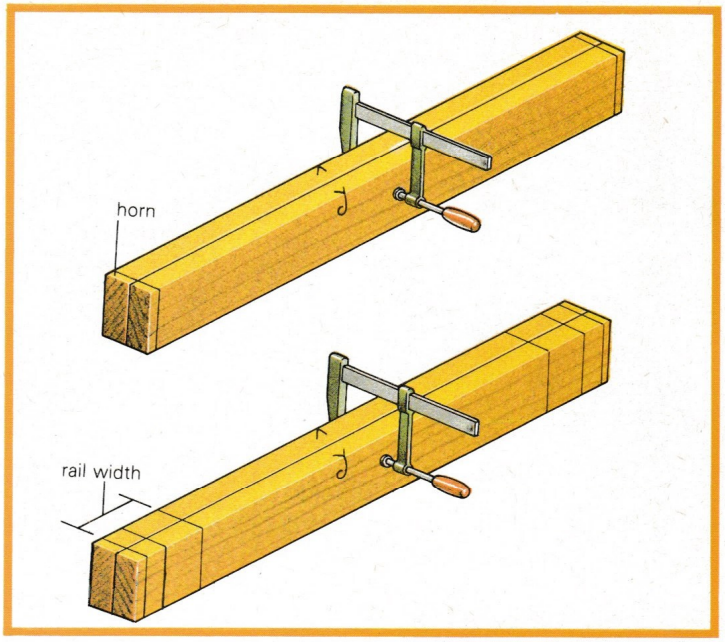


Bernard Fallon



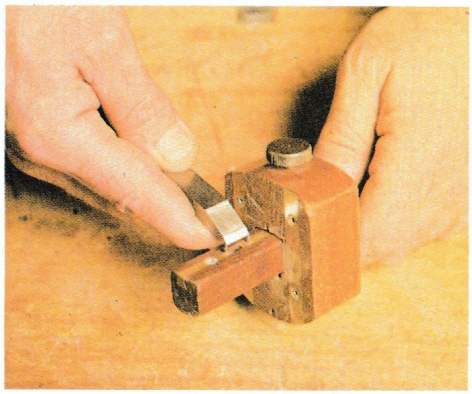
Bernard Fallon

H. *Start a mortise from the centre working outwards (1). Move back to the other side (2) then to the centre again (3). Trim to the edges then cut wedge room if needed (4)*

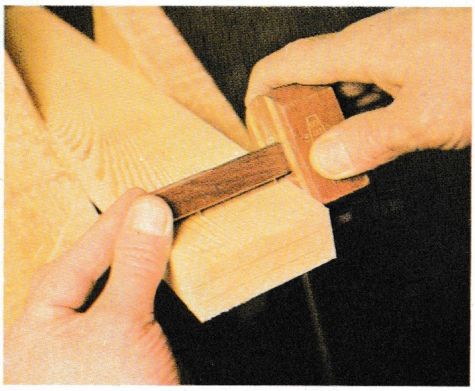


I. *Initial marking out on both the stiles and rails is best done with the relevant pieces of timber cramped together. Mark the waste first, then the rail width*

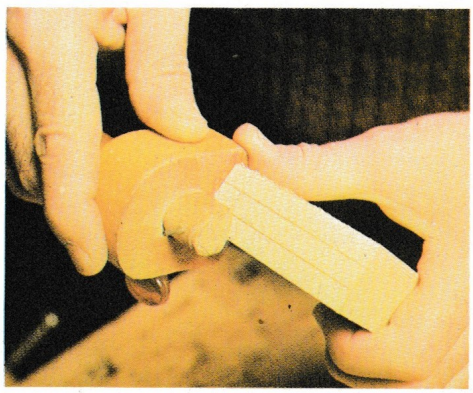
1 *To find the middle of a piece of timber with a mortise gauge, try it from both sides until you get the pin marks to match up*



2 *To mark out a tenon, the mortise gauge must be set to the nearest convenient chisel size. Roll it away from you down the workpiece to mark*



3 *After you have marked the tenon on the rail and mortise on the stile, reset the gauge and mark out the tenon width*



4 *Use a conventional gauge to mark out where the haunch will be cut. Make sure that you have set it to the correct width*

F) or divide it by three and make the distance between tenon centres one-third of the rail width.

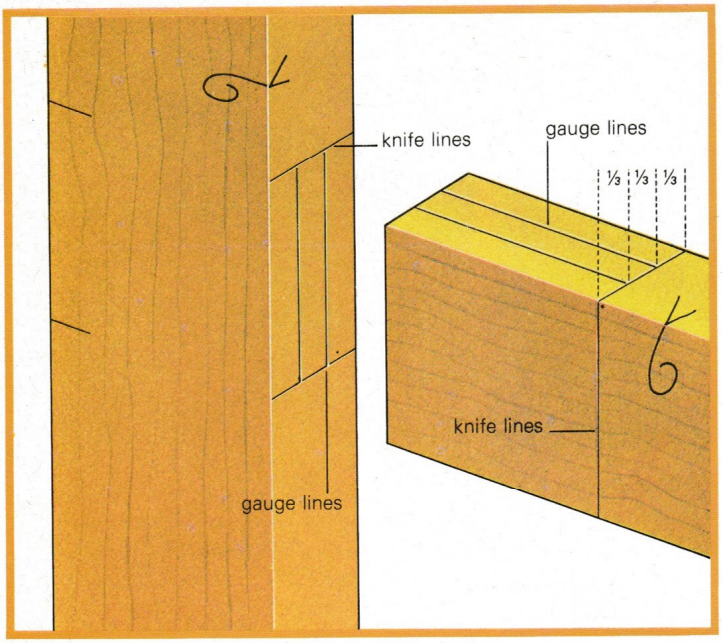
If you are making a stub tenon joint, the depth of the mortise should exceed the length of the tenon by 2mm. The gap allows for excess glue and minimizes the risk of the joint failing through hydraulic action. When you are cutting the mortise for a stub tenon, make sure that there is at least 4.5mm of wood between it and the outer edge of the stile.

When marking and cutting a mortise at the end of a stile, it is customary to leave excess waste material known as a *horn*—between 25mm and 35mm is usual on a standard-sized door frame. The horn helps stop the stile from splitting as the mortise is cut and also protects the frame in transit to its final position, where the waste is trimmed off.

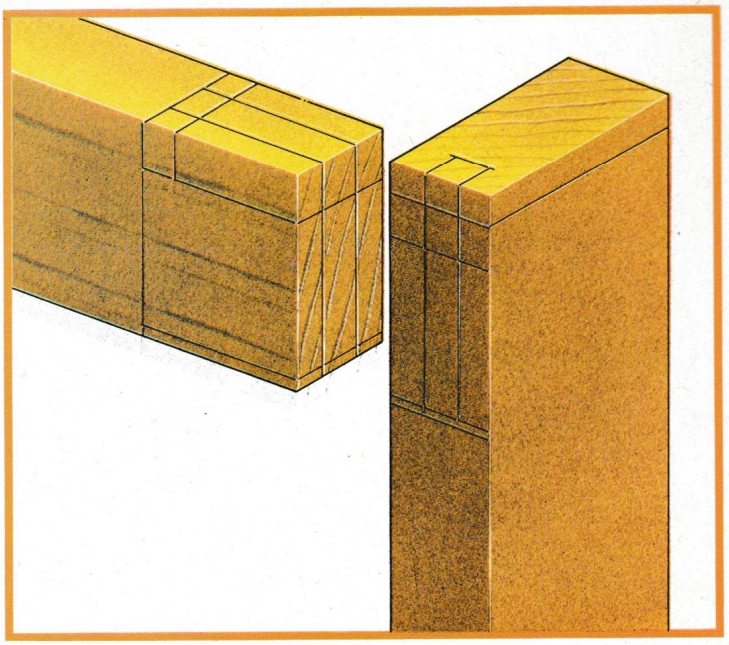
Marking up a simple frame

If you are making a framework which incorporates joints at the ends of stiles, do not forget to allow for the extra length taken up by the horns when you compile your cutting list.

Rail lengths for a framework are normally taken as the overall width of the frame, allowing you plenty of waste material. But if you are using through mortise and tenon joints, add on 12mm to the overall frame width: this gives you 6mm waste on each end, removed when the joint is finally 'cleaned up'.



J. *A marked-out plain through mortise and tenon joint ready to be cut. The lines marking the mortise and corresponding tenon width are made with a mortise gauge*



K. *This more complicated haunched stub joint is at the top of the stile. If you get confused when marking out, shade in the waste areas in pencil*

With your timber to hand, test each piece for true and mark on face sides and face edges (see pages 44 to 49). Lay the pieces out as they will appear in the finished frame, face edges innermost and face sides uppermost.

Designate and mark the stiles 'left' and 'right', and the rails 'top' and 'bottom'. You can also mark the joints A-A, B-B and so on, though the marks should be on waste wood which will be removed later.

Next, place the stiles side by side on the bench, face sides uppermost and face edges outwards, and cramp them together with a small G cramp. Remember to place offcuts between the jaws of the cramp and the workpiece to protect the latter from becoming bruised (fig. I).

With a try square, marking knife and rule, mark off one waste end or horn—whichever is appropriate—on both pieces. Follow by marking the finished lengths of the stiles. The material left represents either waste or another horn.

Your next job is to mark the positions of the mortises and, if you are making a wedged joint, the 'wedge room' on either side of them. Again, use the try square, marking knife and rule but score deeply only those areas which are to be cut. Mark very fine lines on the rest of the timber.

If you are making a through tenon joint, separate the stiles and mark around them individually. Start at the face edge and work around the timber so as to end up at the edge below it.

Make fine lines at each edge of the workpiece to enable you to continue around it without having to score across the whole surface.

When you have finished marking the stiles, cramp the rails in the same way and mark off the overall lengths. Do not forget to add an extra 12mm waste if you are making through mortise and tenon joints. This will be planed off when the joint is assembled.

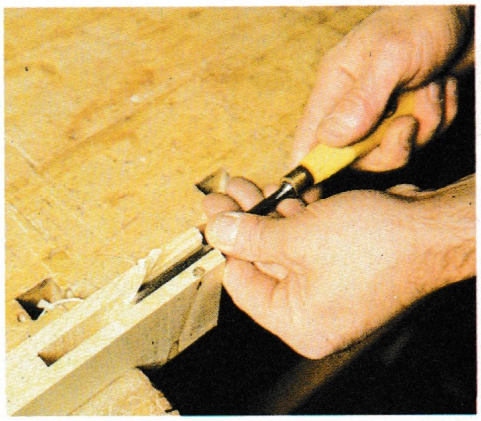
Mark the lengths of the tenons as described above—together with the haunches where necessary (figs I and K). Finally, separate the rails and continue the lines right around each workpiece.

Marking mortises

At this stage, you are ready to mark the widths of the mortises on each stile. By far the easiest way of doing this is with a mortise gauge (fig. 1), a tool similar to a marking gauge but with an adjustable scribing pin in addition to the standard fixed one. You are well advised to go to the trouble of buying or borrowing a mortise gauge, rather than trying to 'make do' with existing tools.

Start by releasing the set screw on the stock and adjusting the distance between the pins to match the width of the chisel you are using to cut the mortise out. Next, you must adjust the stock so that the distance between

5 *The saw cuts for the haunch groove are best made with a dovetail saw but if you do not have one, use an ordinary tenon saw*



6 *After you have made the saw cuts, chisel out the waste wood in the groove with an appropriately-sized bevel edged chisel*

it and the moveable pin allows you to centre the pins on the timber.

To check this, place the stem of the gauge flat on the workpiece with the stock face to the face side, then roll the gauge until the pins make indentations in the surface. Repeat the operation from the side opposite the face side. If the two sets of marks coincide, the pins are centred and you can tighten the stock. If they do not, adjust the stock until they do.

With the pins centred and the stock back against the face side, roll the gauge away from you to mark the mortise widths on the stiles (fig. 1). Keeping the gauge on the same setting, mark around the rail ends to give you the necessary width of the tenons (fig. 2).

If shoulders or haunches are included in the joints, reset the gauge to the appropriate dimensions and mark them out with the stock against the face edge (fig. 3). Use an ordinary marking gauge to mark the depth of the haunch to be cut across the end of the stile (fig. 4).

If you must use an ordinary marking gauge instead of a mortise gauge, always work from the same face side and edge—resetting the gauge for each mark you make.

Cutting the mortises

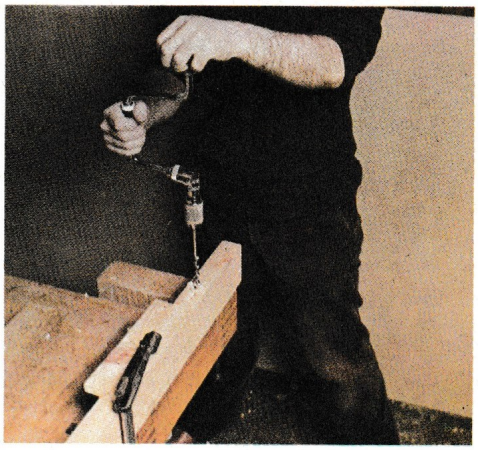
The techniques for chiselling out a simple mortise are described in detail in part 5 of the Carpentry course (pages 205-211). Briefly, the procedure (fig. H) is as follows:

- Cramp the workpiece securely to a solid part of the bench.
- Drive the chisel into the marked-out mortise to dislodge a deep wedge of waste. Use three separate strokes of the chisel.
- Work in a series of small chops from the centre of the mortise to one end, removing waste as you go.
- Turn the chisel around and work back to the other end in the same way.
- For a stub (blind) mortise, wrap a piece of tape around the chisel blade to give you the required depth. Continue removing waste in the same way then trim all sides.
- For a through mortise, continue chiselling until you get half way through the wood then turn the workpiece over and restart the mortise from the other side.

Where necessary, the 'wedge room' outside the mortise must also be chiselled. Line up your chisel on the appropriate line with the bevel pointing towards the centre of the mortise. Chop downwards at an angle of about 85° to finish the wedge room 3-5mm from the end of the mortise.

For a haunch groove, you need to make two saw cuts: one to the waste sides and one to the depth of the groove (fig. 5). You can use a tenon saw for these, though if you have one, a dovetail saw is easier to manage. Once you have made the cuts, remove the waste with a suitably-sized bevel edged chisel (fig. 6).

When cutting large—over 12mm wide—through mortises, you can save yourself a great deal of hard work by drilling a series of overlapping holes before you start chiselling. The bit should be slightly smaller than the width of the mortise and of the woodworking, high-speed, flat Ridgeway type if used with an electric drill. For a brace and bit, use a Jennings-type woodworking bit (fig. 7).



7 *The easiest way to start off large mortises is to drill a series of holes within the confines of the marking out lines on the stile*

8 *Afterwards, remove the rest of the waste wood with a mortise chisel, held as shown and used in the correct sequence*

To avoid splintering the wood, drill through from one side until the tip of the bit just breaks the surface of the other. At this point turn the workpiece over and finish the holes from the reverse side. Use wide and narrow mortise chisels or heavy firmer chisels to remove the rest of the waste.

Cutting the tenons

The procedure for cutting a simple tenon is the same as that for cutting the pin in a halving joint (see pages 522 to 526). Make the longitudinal cuts first, then the cross cuts, cutting to the waste side of the line at all times (figs 9 to 12). Afterwards, clean up the tenons with a bevel edged chisel.

Where a rail is too long to place vertically in the vice, arrange it at an angle, parallel to the bench and firmly clamped. Many craftsmen prefer

9 *On large section timbers, use a panel saw or crosscut saw to make cuts with the grain. Make sure that the timber is well supported*

10 *Crosscutting—such as cutting away the shoulders around the tenon—can be done with a dovetail or tenon saw and a bench hook*

this set up for all tenon cutting, so it is worth trying in any case.

Haunched tenon: Make the longitu-, dinal cuts as normal, but remember that one will be shorter than the other to allow for the haunch itself. Afterwards, cut the haunch, the cheeks and finally the shoulders.

Double tenon: To remove the space between double tenons, first make the longitudinal cuts. Remove the waste with a coping saw (fig. 14), then saw off the cheeks and the shoulders. As with all tenons, clean up the finished cuts with a chisel.

Assembling non-wedged joints

When you have cut all the joints, assemble the frame (or construction) in a dry run—without glue—to check the fit. The joints should require no more than light tapping with a hammer—using an offcut to protect the work—to get them to interlock.

If greater force is needed, dismantle the frame and make small adjustments. While the frame is together, set out whatever cramps are necessary and cramp up the frame without adhesive. Check that it is square by measuring the diagonals, which should be equal in length.

Tidy up the inside surfaces of the frame with a finely set plane and glasspaper. You can, if you wish, apply a finish to the inside edges of the frame timbers at this stage. But mask off the mating surfaces of the joints first to keep them clean for when you apply the glue.

Finally, glue and sash-cramp the joints (see pages 100 to 105) with offcuts of timber to protect the workpieces. Wipe off any excess adhesive while it is still wet.

Wedged joints

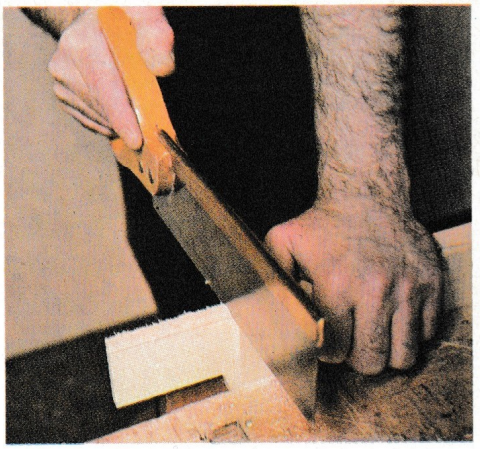
Cut wedges for the joints from offcuts of waste wood. Do this as carefully as possible, since you cannot test them in a dry run with the tenon in place. Make adjustments to the widths of the wedges where necessary then clean, glue and cramp.

In the case of a through wedged joint, drive the wedges in once the tenon is in place in its mortise (fig. 16).

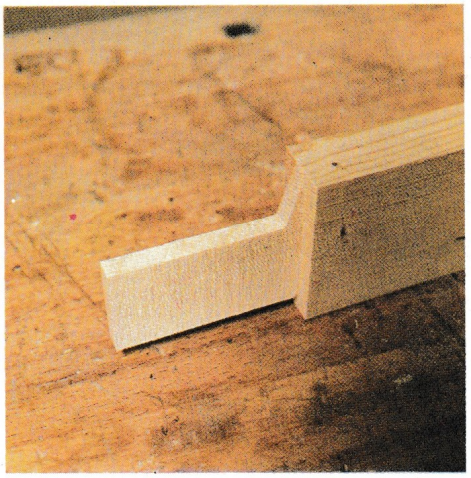
Finishing

When the joints are thoroughly dry, remove the cramps. Cut off all the waste—horns, pieces of wedge, through tenon ends—with a fine saw, cutting no closer than 1mm to the work. Afterwards, use a finely set plane and glasspaper on a sanding block to complete the finish.

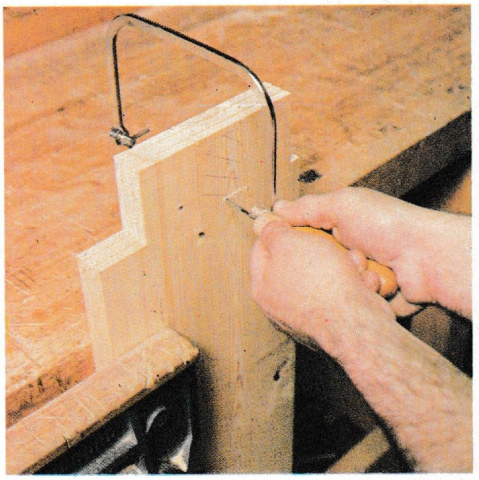
11 *Make the angled cuts with the workpiece once more secured in the vice. Here, the secret haunching above the tenon is being cut away*



12 *Take extra care when you cut out the final pieces of waste. Even at this stage, a slip can still ruin the finished joint*

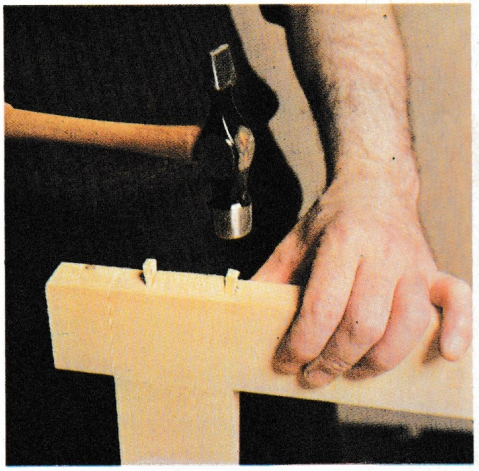


13 *The finished rail, showing the sloped secret haunch which will become invisible when inserted into its matching slot on the stile*



14 *When making a double joint, use a coping saw to cut away the waste between tenons. Take care not to stray outside the marked lines*

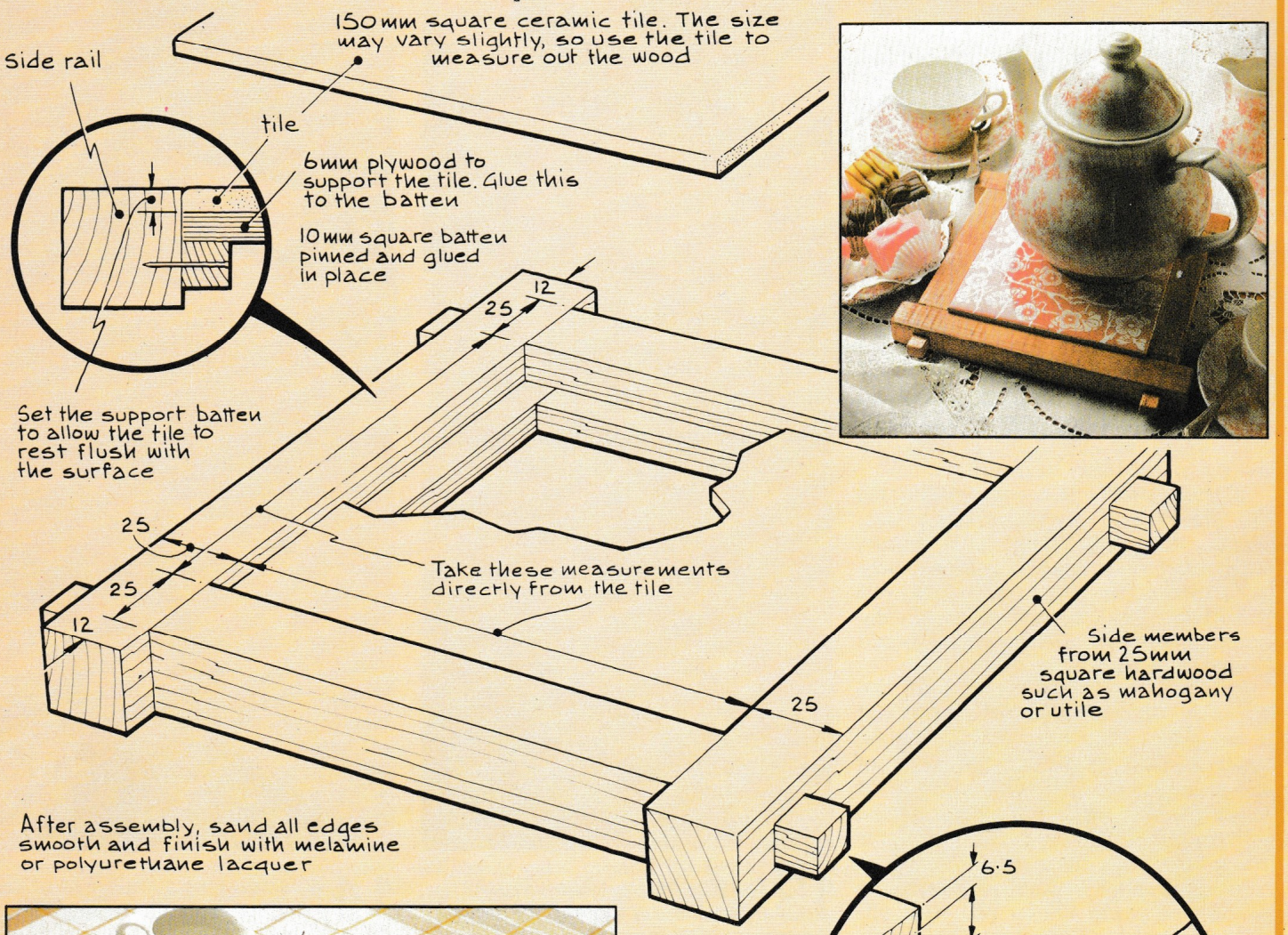
15 *Assembly of all mortise and tenon joints is made easier if you first bevel away the edges of the waste on the tenons with a sharp chisel*

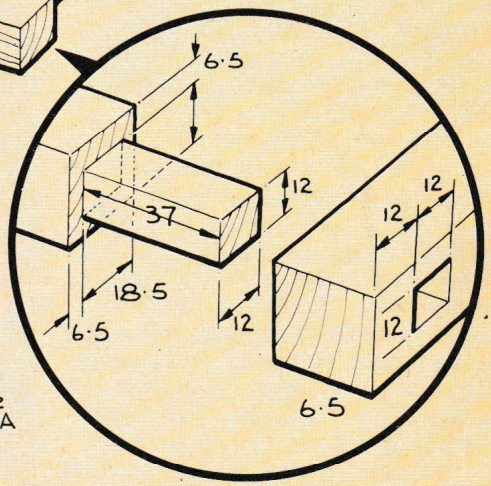


16 *On a through wedged joint, the wedges are tapped in as far as they will go then the waste on the tenon is trimmed off*

Heat-resistant teapot stand

Simon Butcher


150mm square ceramic tile. The size may vary slightly, so use the tile to measure out the wood
Side rail
tile
6mm plywood to support the tile. Glue this to the batten
10mm square batten pinned and glued in place
Set the support batten to allow the tile to rest flush with the surface
12
25
25
25
12
Take these measurements directly from the tile
25
Side members from 25mm square hardwood such as mahogany or utile
After assembly, sand all edges smooth and finish with melamine or polyurethane lacquer



Accurate marking out and cutting is very important. A pillar drill or dowelling jig will help you to align the mortise accurately.

Assemble the joints with PVA woodworking adhesive

Practise the mortise and tenon joint by making this hardwood frame which turns an attractive tile into a practical teapot stand. The tenons are extended to make a decorative feature at the corners.

Careful marking out and cutting are essential. Use the tile to measure the dimensions shown. Ensure accurate mortises by using a drill stand or dowel jig to drill a pilot hole at right angles. Square this with a chisel. Cut the tenons with a fine-toothed tenon saw and assemble the frame with care.

Advertising Arts

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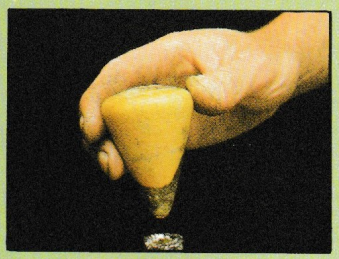
Where to buy it

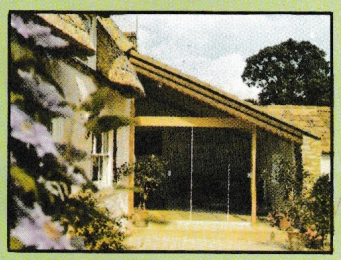
Decorative shutters Page 565
Studs and hinges from Fobel, Head Office: Hyde House, Colindale, London NW9, Area Depots in Luton, Wokingham, Stockport, Bristol. See Yellow pages for addresses.
Reglazing Page 593
Information on glass and all aspects of glazing from the Glass and Glazing Federation, 6 Mount Row, London W1Y 6DY.
Pine Table Page 598
Optional metal brackets from Woodfit Ltd, Whittle Low Mill, Chorley, Lancs.

Acknowledgements

Pine Table Page 598
Rug and kitchen accessories from Habitat, Tottenham Court Road, London, W1.

In next week's issue





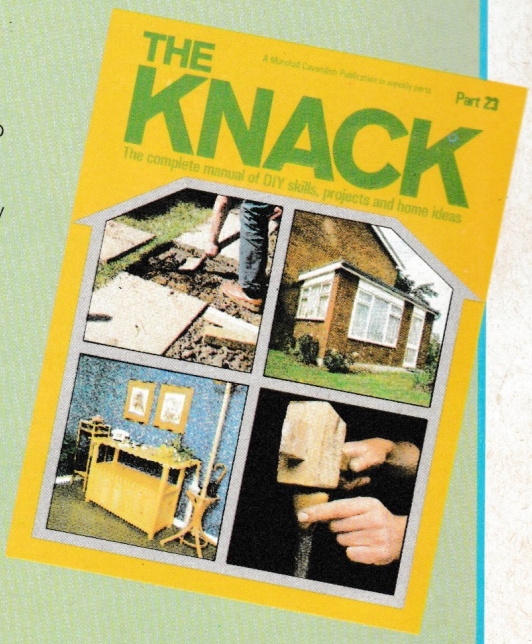
Ideas for a bedsit: Coping with one-room living means making the most of the space available and incorporating ingenious design ideas. Home designer has plenty of suggestions to make, with something to suit every age group

Repairing paths: Cracked paths and drives can be dangerous as well as unsightly. We show some of the repairs you can make, including patching holes in concrete or asphalt and how to replace a stone flag

Building an extension 1: In the first part of our guide to building a brick and block, flat-rooved extension, we look at the timetable you should set yourself and discuss how to obtain all the necessary planning permissions

A monk's chest: This is a really ingenious design for a storage chest which converts in seconds into a table or chair. The chest is solidly constructed too, with tongued-and-grooved panelling over a pine frame

Levelling a concrete floor: We take you step by step through levelling and rescreeding old concrete floors to provide the perfect base on which to lay tiles, carpets or sheet vinyl



PICTURE TILES

You can buy attractive tiles suitable for the teapot stand on page 620 singly from specialist tile shops. Other good sources for decorative tiles are market stalls and secondhand or junk shops. You can often pick up single tiles at a reasonable price. But if you cannot find a tile you like, or would prefer an individual design, it is quite easy to make your own.

One way to do this is to buy a plain, unglazed tile and paint your design on it. Make sure you use a heat resisting paint. Three possible designs are shown here. Paint the background colour first, then add the design, either freehand or using stencils. The sunburst effect is achieved by using a mask to paint the yellow area first, then, still using the mask, lightly shading the tips of the rays with spray paint.

Alternatively, you can paint your design on paper or thin card—or even use a picture from a magazine. Glue this to the plywood base inside the teapot stand frame. You can seal the design permanently and protect it from heat or liquids by using a clear plastic embedding resin available from craft shops. Mix this according to the instructions and pour it into the cavity over your design. Once set, the seal is permanent.

Bernard Fallon